Drinking Water Surveillance Program

KITCHENER WELL SUPPLY

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KITCHENER
WELL SUPPLY

DRINKING WATER SURVEILLANCE PROGRAM

ANNUAL REPORT 1989

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EXECUTIVE SUMMARY

DRINKING WATER SURVEILLANCE PROGRAM

KITCHENER WELL SUPPLY
1989 ANNUAL REPORT

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. In 1989, 65 plants were being monitored.

The Kitchener Well Supply source consists of many wells. Three locations were sampled on the DWSP; K70, an induced infiltration system located on the east side of Kitchener adjacent to the Grand River, K21 (Mannheim East/West), a high capacity overburden well field located at the western city limit of Kitchener, and Strange Street Reservoir, one of the first well fields developed in Kitchener located near the city-centre.

Samples were taken of raw and treated water from the K70 well, raw water from the K21 well and treated water from the Mannheim Reservoir, treated water from the Strange Street well and water from one house in the distribution system. The Kitchener Well Supply was sampled for the presence of approximately 180 parameters monthly. Parameters were divided into the following groups: Bacteriological, Inorganic and Physical (Laboratory Chemistry, Field Chemistry and Metals) and Organic (Chloroaromatics, Chlorophenols, Pesticides and PCB, Phenolics, Polyaromatic Hydrocarbons, Specific Pesticides and Volatiles). Chlorophenols and Specific Pesticides were analyzed in June and November only.

A summary of results is shown in Table A.

Inorganic and Physical parameters were below any applicable health related guidelines.

Samples wete analyzed monthly for the presence of approximately 110 Organics. Levels did not exceed health related guidelines.

During 1989, the DWSP sampling results indicated that the Kitchener well supply produced generally good quality water and this was maintained in the distribution.

TABLE A

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE BY SCAN (1988)

SCAN	K21 RAW			MANNHEIN RESERVOIR			SITE 1			STRANGE ST RESERVOIR			K70 RAW			K70 TREATED		
	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE
BACTERIOLOGICAL	36	1	2	36	0	0	36	10	27	36	7	19	36	9	25	36	1	2
CHEMISTRY (FLD)	26	23	88	50	40	80	93	51	54	58	48	82	24	24	100	60	60	100
CHEMISTRY (LAB)	252	179	71	252	167	66	444	369	83	252	179	71	252	195	77	252	196	77
METALS	288	140	48	288	150	52	564	340	60	288	172	59	288	153	53	288	155	53
CHLOROAROMATICS	168	0	0	154	0	0	168	0	0	154	0	0	154	0	0	154	0	0
CHLOROPHENOLS	12	0	0	12	0	0	.	.	.	12	0	0	12	0	0	12	0	0
PAH	191	0	0	191	0	0	.	.	.	191	0	0	192	0	0	192	0	0
PESTICIDES & PCB	408	0	0	387	0	0	343	0	0	387	0	0	387	2	0	387	2	0
PHENOLICS	12	3	25	12	4	33	.	.	.	12	4	33	12	7	58	12	6	50
SPECIFIC PESTICIDES	65	0	0	64	0	0	12	0	0	64	0	0	64	0	0	64	0	0
VOLATILES	348	1	0	348	22	6	348	24	6	348	39	11	348	1	0	348	40	11
TOTAL	1806	347		1794	383		2008	794		1802	449		1769	391		1805	460	

NO KNOWN HEALTH RELATED GUIDELINE WAS EXCEEDED

A POSITIVE VALUE DENOTES THAT THE RESULT IS GREATER THAN THE STATISTICAL LIMIT OF DETECTION AND IS QUANTIFIABLE
A '.' INDICATES THAT NO SAMPLE WAS TAKEN

DRINKING WATER SURVEILLANCE PROGRAM

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INTRODUCTION

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. In 1989, 65 plants were being monitored.

The DWSP was initiated in Kitchener in the spring of 1987. An annual report was published for 1987 and 1988 (ISSN 0840-5190).

This report contains information and results for 1989.

In order to accommodate the increasing number of plants on the DWSP and to facilitate the timely completion of the 1989 annual reports, plants with two or more years of published data will receive an abbreviated annual report. This report maintains the same general format as in previous years but does not include a comprehensive discussion of results. For more detail on the parameters analyzed and discussion of results, consult the 1987 and 1988 reports.

PLANT DESCRIPTION

The Kitchener Well Supply source consists of many wells. Three locations were sampled on the DWSP; K70, an induced infiltration system located on the east side of Kitchener adjacent to the Grand River; K21 (Mannheim East/West), a high capacity overburden well field located at the western city limit of Kitchener; and Strange Street Reservoir, one of the first well fields developed in Kitchener located near the city-centre.

The K21 (Mannheim East/West) has flows for day of sampling ranging from 28.9 x 1000 m^3/day to 39.0 x 1000 m^3/day. K70 (Recharge well) has flows on the day of sampling ranging from 2.1 x 1000 m^3/day to 3.0 x 1000 m^3/day. The Strange Street reservoir has flows ranging from 4.5 x 1000 m^3/day to 9.8 x 1000 m^3/day. These three wells are disinfected with chlorine.

The Kitchener Well Supply serves a population of approximately 144,000 people.

The sample location is shown in Figure 1. General information is presented in Table 2.

FIGURE 1

DRINKING WATER SURVEILLANCE PROGRAM

SITE LOCATION MAP

KITCHENER WELL SUPPLY SYSTEM

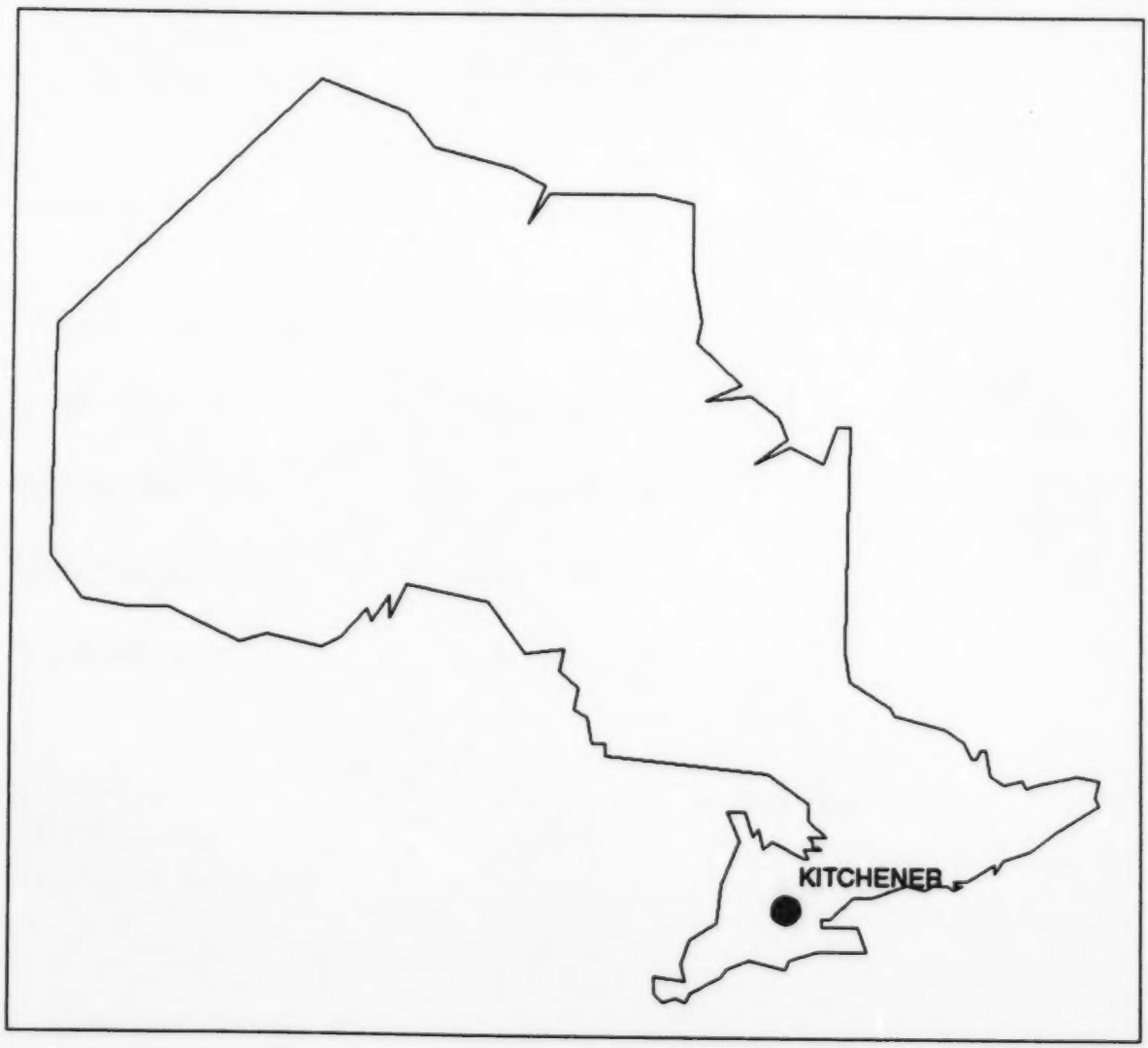

TABLE 1

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

IN-PLANT MONITORING KITCHENER WELL SUPPLY 1989

PARAMETER	LOCATION	FREQUENCY
Chlorine residual total	Treated	daily

TABLE 2

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

GENERAL INFORMATION

KITCHENER WELL SUPPLY

LOCATION:	REGIONAL MUNICIPALITY OF WATERLOO C/O MARSLAND CENTER 20 ERB STREET WEST WATERLOO, ONTARIO N2J 4G7
SOURCE:	GROUNDWATER
DESIGN CAPACITY:	100 X 1000 M^3/DAY
OPERATION:	MUNICIPALITY
SYSTEM MANAGER:	R. MACDONALD
MINISTRY REGION:	WEST CENTRAL
DISTRICT OFFICER:	D.R. IRELAND

MUNICIPALITY SERVED	POPULATION
KITCHENER/WATERLOO	144,000

SAMPLING AND ANALYSES

Plant operating personnel perform analyses on parameters for process control listed in Table 1.

Samples were taken from raw well K21, the treated Mannheim reservoir and one distribution location. The K70 recharge well was sampled for raw and treated water and the Strange Street well supply was sampled for treated water only at the reservoir. The Kitchener Well Supply locations were sampled for the presence of approximately 180 parameters on a monthly basis. Samples for Specific Pesticide and Chlorophenol analysis were taken in June and November only. Polyaromatic Hydrocarbons and Phenolics are only analyzed in the raw and treated water at the plant. As of August 1989, the analysis of Triazine pesticides was dropped from the distribution sample. Laboratory analysis was conducted at the Ministry of the Environment facilities in Rexdale, Ontario.

RESULTS

Field Chemistry measurements were recorded on the day of sampling and were entered on the DWSP database as submitted by plant personnel.

Table 3 contains information on the sample day retention time, flow rate and chlorine dosages.

Table 4 is a summary break-down of the number of water samples analyzed by parameter and by water type. The number of times that a positive or trace result was detected is also reported.

Positive denotes that the result is greater than the statistical limit of detection established by the Ministry of the Environment (MOE) laboratory staff and is quantifiable. Trace (<T) denotes that the level measured is greater than the lowest value detectable by the method but lies so close to the detection limit that it cannot be confidently quantified.

Table 5 presents the results for parameters detected on at least one occasion.

Table 6 lists all parameters analyzed in the DWSP.

Associated guidelines and detection limits are also supplied on tables 5 and 6. Parameters are listed alphabetically within each scan.

DISCUSSION

General

Water quality is judged by comparison with the Ontario Drinking Water Objectives (ODWOs) as defined in the 1984 publication (ISBN

0-7743-8985-0). The Province of Ontario has health related and aesthetic objectives for 49 parameters. These are currently under review. When an ODWO is not available, guidelines/limits from other agencies are consulted. The Parameters Listing System (PALIS), recently published (ISBN 0-7729-4461-X) by the MOE, catalogues and keeps current over 1750 guidelines for 650 parameters from agencies throughout the world.

Many of the compounds detected are naturally occurring or are treatment by-products.

IN THIS REPORT, DISCUSSION IS LIMITED TO THE TREATED AND DISTRIBUTED WATER AND ADDRESSES ONLY THOSE PARAMETERS WITH CONCENTRATIONS ABOVE GUIDELINE VALUES AND ORGANIC PARAMETERS WITH POSITIVE RESULTS.

Inorganic and Physical

Colour

The aesthetic ODWO of 5.0 True Colour Units (TCU) was exceeded six times in the K70 treated samples to a maximum of 6.5 TCU.

Hardness

The aesthetic ODWO for hardness indicates that a level of between 80 and 100 mg/L as the equivalent quantity of calcium carbonate is appropriate and water supplies with a hardness greater than 200

mg/L is considered poor. Hardness values at the Kitchener supplies are consistently above 200 mg/L and range to a high of 490 mg/L.

Other parameters associated with hardness, calcium, magnesium and conductivity are also above the respective aesthetic limits.

Iron

Iron values exceeded the ODWO maximum desirable concentration (MDC) of 300 µg/L in one distribution sample in September at 370 µg/L.

Manganese

Manganese values exceeded the ODWO Maximum Desirable Concentration (MDC) of 50 µg/L in twenty-two treated and distribution samples to a high of 260 µg/L.

Organic Parameters

Atrazine

Atrazine was reported at positive levels two times in the K70 treated water to a maximum of 550 ng/L. Health and Welfare Canada has an interim Maximum Acceptable Concentration (IMAC) for Atrazine in drinking water of 60,000 ng/L.

1,1 Dichloroethane

1,1 Dichloroethane was reported at 1.2 ng/L in the September distribution sample. There is no drinking water guideline

available.

1,1,1-Trichloroethane

1,1,1-Trichloroethane was reported in all twelve treated samples from the Strange Street Reservoir. All values, ranging from .72 ug/L to 1.04 ug/L were below the United States Environmental Protection Agency's Maximum Contaminant Level (MCL) for 1,1,1-Trichloroethane in drinking water of 200 ug/L.

Trihalomethanes

Trihalomethanes (THMs) are acknowledged to be produced during the water treatment process and will always occur in chlorinated surface waters. THMs are comprised of Chloroform chlorodibromomethane, and dichlorobromomethane. Bromoform occurs occasionally. Results are reported for the individual compounds as well as for the total THMs. All Total THM occurrences in the treated and distributed samples, ranging from traces to 28.7 ug/L, were well below the ODWO of 350 ug/L.

CONCLUSIONS

The repeated finding of quantifiable levels of 1,1,1-Trichloroethane and traces of Trichloroethylene in the Strange Street Reservoir indicates low level contamination of the reservoir through one or more of its source wells.

The frequency of Atrazine detected in the K70 samples suggests that the source of this contaminant is the Grand River.

The results listed in this report for 1989 are consistent with results reported for previous years.

The Regional Municipality of Waterloo is presently addressing the comments made in the conclusion of the 1988 DWSP annual report. A water treatment facility is under construction.

The treated water was generally of good quality and this was maintained in the distribution system.

TABLE 3

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1989

	SAMPLE DAY CONDITIONS			TREATMENT CHEMICAL DOSAGES (MG/L)		
	K21 (HANNHEIM)			K70 RECHARGE WELL		
DATE	DELAY * TIME(HRS)	FLOW (1000M3)	PRE-CHLORINATION SODIUM HYPOCHLORITE	DELAY * TIME(HRS)	FLOW (1000M3)	PRE-CHLORINATION SODIUM HYPOCHLORITE
JAN 17	.5	29.3	00.72	.3	2.7	00.76
FEB 14	.5	28.9	00.76	.2	2.8	00.72
MAR 21	.2	29.4	04.05	.2	2.7	01.26
APR 18	.3	32.8	04.55	.5	2.1	00.76
MAY 16	.4	35.6	04.05	.2	2.5	00.76
JUN 20	.6	37.9	02.40	.3	2.4	00.79
JUL 18	.5	39.0	02.52	.3	2.8	00.66
AUG 22					2.8	00.47
AUG 23	.4	36.1	01.95	.	.	.
SEP 19	.5	36.4	02.40	.3	2.5	00.69
OCT 17	.4	34.8	02.02	.2	2.7	00.51
NOV 21	.3	36.9	02.02	.4	2.8	00.24
DEC 19	.3	33.4	01.39	.3	3.0	00.54

* THE DELAY TIME BETWEEN THE RAW AND TREATED WATER SAMPLING, SHOULD ESTIMATE THE RETENTION TIME

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			HANNHEIN RESERVOIR			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
BACTERIOLOGICAL	FECAL COLIFORM MF	12	1	0	.	.	.	.	.	.	11	0	0	1	0	0	.	.	.
	STANDRD PLATE CNT MF	.	.	.	12	1	0	12	3	0	1	0	0	11	0	0	12	7	0
	TOTAL COLIFORM MF	12	4	0	12	0	0	12	1	0	12	0	0	12	0	0	12	0	0
	T COLIFORM BCKGRD MF	12	4	0	12	0	0	12	3	0	12	1	0	12	0	0	12	3	0
*TOTAL SCAN BACTERIOLOGICAL		36	9	0	36	1	0	36	7	0	36	1	0	36	0	0	36	10	0
*TOTAL GROUP BACTERIOLOGICAL		36	9	0	36	1	0	36	7	0	36	1	0	36	0	0	36	10	0
CHEMISTRY (FLD)	FLD CHLORINE (COMB)	.	.	.	12	12	0	11	9	0	1	0	0	8	5	0	17	3	0
	FLD CHLORINE FREE	.	.	.	12	12	0	11	6	0	1	0	0	8	4	0	15	1	0
	FLD CHLORINE (TOTAL)	.	.	.	12	12	0	12	9	0	1	0	0	10	8	0	17	3	0
	FLD PH	12	12	0	12	12	0	12	12	0	11	11	0	12	11	0	22	22	0
	FLD TEMPERATURE	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	22	22	0
*TOTAL SCAN CHEMISTRY (FLD)		24	24	0	60	60	0	58	48	0	26	23	0	50	40	0	93	51	0
CHEMISTRY (LAB)	ALKALINITY	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	CALCIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	CYANIDE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	CHLORIDE	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	COLOUR	12	12	0	12	11	1	12	5	7	12	0	9	12	0	10	24	10	14
	CONDUCTIVITY	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			HANNHEIM RESERVOIR			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
CHEMISTRY (LAB)	FLUORIDE	12	12	0	12	12	0	12	11	1	12	12	0	12	10	2	24	24	0
	HARDNESS	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	IONCAL	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	LANGELIERS INDEX	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	MAGNESIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	SODIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	AMMONIUM TOTAL	12	4	2	12	3	3	12	2	3	12	0	2	12	0	2	24	1	7
	NITRITE	12	2	10	12	3	8	12	1	11	12	12	0	12	1	10	24	7	17
	TOTAL NITRATES	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	23	1
	NITROGEN TOT KJELD	12	12	0	12	12	0	12	4	8	12	0	12	12	1	11	24	17	7
	PH	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	PHOSPHORUS FIL REACT	12	0	7	12	2	5	12	0	8	12	0	6	12	0	6	.	.	.
	PHOSPHORUS TOTAL	12	0	11	12	0	11	12	0	10	12	0	7	12	0	9	.	.	.
	SULPHATE	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	TURBIDITY	12	9	3	12	9	3	12	12	0	12	11	1	12	11	1	24	23	1
*TOTAL SCAN CHEMISTRY (LAB)		252	195	33	252	196	31	252	179	48	252	179	37	252	167	51	444	369	47
METALS	SILVER	12	0	3	12	0	2	12	0	3	12	0	5	12	0	2	24	0	10
	ALUMINUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	ARSENIC	12	0	11	12	0	12	12	5	7	12	0	11	12	0	10	24	7	15
	BARIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	BORON	12	12	0	12	12	0	12	12	0	12	11	1	12	11	1	24	22	2

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE	K70 RAW		K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			MANNHEIM RESERVOIR			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
METALS	BERYLLIUM	12	0	11	12	1	9	12	2	9	12	1	10	12	1	9	24	1	20
	CADMIUM	12	0	4	12	0	6	12	0	8	12	0	3	12	0	2	24	0	13
	COBALT	12	0	9	12	0	8	12	0	12	12	0	6	12	0	4	24	0	10
	CHROMIUM	12	11	0	12	10	2	12	11	1	12	11	0	12	11	1	24	22	0
	COPPER	12	11	1	12	12	0	12	11	1	12	0	12	12	11	1	24	24	0
	IRON	12	0	1	12	0	0	12	12	0	12	0	0	12	0	7	24	14	6
	MERCURY	12	1	4	12	0	5	12	1	4	12	1	4	12	1	5	12	0	6
	MANGANESE	12	12	0	12	11	1	12	12	0	12	12	0	12	12	0	24	24	0
	MOLYBDENUM	12	12	0	12	12	0	12	11	1	12	12	0	12	11	1	24	23	1
	NICKEL	12	1	8	12	2	6	12	2	4	12	3	2	12	3	0	24	12	6
	LEAD	12	9	3	12	12	0	12	6	6	12	6	4	12	5	6	24	23	1
	ANTIMONY	12	11	1	12	11	1	12	11	1	12	11	1	12	11	1	24	22	2
	SELENIUM	12	0	6	12	0	10	12	0	9	12	0	6	12	0	7	24	0	16
	STRONTIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	TITANIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	THALLIUM	12	0	6	12	0	8	12	0	9	12	0	8	12	1	4	24	0	9
	URANIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	VANADIUM	12	1	11	12	0	12	12	4	8	12	0	12	12	0	12	24	2	22
	ZINC	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
*TOTAL SCAN METALS		288	153	79	288	155	82	288	172	83	288	140	85	288	150	73	564	340	139
*TOTAL GROUP INORGANIC & PHYSICAL		564	372	112	600	411	113	598	399	131	566	342	122	590	357	124	1101	760	186
CHLOROAROMATICS	HEXACHLOROBUTADIENE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE	K70 RAW		K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			HANNHEIN RESERVOIR			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
CHLOROAROMATICS	123 TRICHLOROBENZENE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	1234 T-CHLOROBENZENE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	1235 T-CHLOROBENZENE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	124 TRICHLOROBENZENE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	1245 T-CHLOROBENZENE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	135 TRICHLOROBENZENE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	HCB	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	HEXACHLOROETHANE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	OCTACHLOROSTYRENE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	PENTACHLOROBENZENE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	236 TRICHLOROTOLUENE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	245 TRICHLOROTOLUENE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	26A TRICHLOROTOLUENE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
*TOTAL SCAN CHLOROAROMATICS		154	0	0	154	0	0	154	0	0	168	0	0	154	0	0	168	0	0
CHLOROPHENOLS	234 TRICHLOROPHENOL	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	2345 T-CHLOROPHENOL	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	2356 T-CHLOROPHENOL	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	245-TRICHLOROPHENOL	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	246-TRICHLOROPHENOL	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	PENTACHLOROPHENOL	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
*TOTAL SCAN CHLOROPHENOLS		12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	0	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE	K70 RAW		K70 TREATED		STRANGE ST RESERVOIR		K21 RAW		MANNHEIN RESERVOIR		SITE 1	
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PAH	PHENANTHRENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	.	.	.
	ANTHRACENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	.	.	.
	FLUORANTHENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	.	.	.
	PYRENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	.	.	.
	BENZO(A)ANTHRACENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	.	.	.
	CHRYSENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	.	.	.
	DIMETH. BENZ(A)ANTHR	5	0	0	5	0	0	4	0	0	4	0	0	4	0	0	.	.	.
	BENZO(E) PYRENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	.	.	.
	BENZO(B) FLUORANTHEN	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	.	.	.
	PERYLENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	.	.	.
	BENZO(K) FLUORANTHEN	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	.	.	.
	BENZO(A) PYRENE	7	0	0	7	0	0	7	0	0	7	0	0	7	0	0	.	.	.
	BENZO(G,H,I) PERYLEN	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	.	.	.
	DIBENZO(A,H) ANTHRAC	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	.	.	.
	INDENO(1,2,3-C,D) PY	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	.	.	.
	BENZO(B) CHRYSENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	.	.	.
	CORONENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	.	.	.
*TOTAL SCAN PAH		192	0	0	192	0	0	191	0	0	191	0	0	191	0	0	0	0	0
PESTICIDES & PCB	ALDRIN	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	ALPHA BHC	11	0	0	11	0	0	11	0	1	12	0	0	11	0	0	12	0	0
	BETA BHC	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			MANNHEIM RESERVOIR			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PESTICIDES & PCB	LINDANE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	ALPHA CHLORDANE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	GAMMA CHLORDANE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	DIELDRIN	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	METHOXYCHLOR	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	ENDOSULFAN 1	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	ENDOSULFAN II	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	ENDRIN	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	ENDOSULFAN SULPHATE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	HEPTACHLOR EPOXIDE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	HEPTACHLOR	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	MIREX	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	OXYCHLORDANE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	OPDDT	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	PCB	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	DDD	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	PPDDE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	PPDDT	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	AMETRINE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0
	ATRAZINE	12	2	6	12	2	6	12	0	0	12	0	0	12	0	0	7	0	0
	ATRATONE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0
	CYANAZINE (BLADEX)	12	0	0	12	0	0	12	0	0	12	0	1	12	0	0	7	0	0
	D-ETHYL ATRAZINE	12	0	4	12	0	5	12	0	0	12	0	0	12	0	0	7	0	0
	D-ETHYL SIMAZINE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			MANNHEIN RESERVOIR			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PESTICIDES & PCB	PROMETONE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0
	PROPAZINE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0
	PROMETRYNE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0
	METRIBUZIN (SENCOR)	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0
	SIMAZINE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0
	ALACHLOR (LASSO)	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0
	METOLACHLOR	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	7	0	0
*TOTAL SCAN PESTICIDES & PCB		387	2	10	387	2	11	387	0	1	408	0	1	387	0	0	343	0	0
PHENOLICS	PHENOLICS	12	7	4	12	6	5	12	4	5	12	3	5	12	4	5	.	.	.
*TOTAL SCAN PHENOLICS		12	7	4	12	6	5	12	4	5	12	3	5	12	4	5	0	0	0
SPECIFIC PESTICIDES	TOXAPHENE	11	0	0	11	0	0	11	0	0	12	0	0	11	0	0	12	0	0
	2,4,5-T	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	2,4-D	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	2,4-DB	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	2,4 D PROPIONIC ACID	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	DICAMBA	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	PICHLORAM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.
	SILVEX	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			HANNHEIN RESERVOIR			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
SPECIFIC PESTICIDES	DIAZINON	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	DICHLOROVOS	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	CHLORPYRIFOS	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	ETHION	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	AZINPHOS-METHYL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.
	MALATHION	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	MEVINPHOS	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	METHYL PARATHION	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	METHYLTRITHION	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	PARATHION	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	PHORATE	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	RELDAN	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	RONNEL	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	AMINOCARB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.
	BENOMYL	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	.	.	.
	BUX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.
	CARBOFURAN	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	CICP	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	DIALLATE	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	EPTAM	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	IPC	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	PROPOXUR	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	CARBARYL	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	BUTYLATE	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.

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DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

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SCAN	PARAMETER	SITE	K70 RAW		K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			HANNHEIN RESERVOIR			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
*TOTAL SCAN SPECIFIC PESTICIDES		64	0	0	64	0	0	64	0	0	65	0	0	64	0	0	12	0	0
VOLATILES	BENZENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	1	12	0	3
	TOLUENE	12	0	1	12	0	4	12	0	6	12	0	1	12	0	3	12	0	6
	ETHYLBENZENE	12	0	2	12	0	0	12	0	6	12	0	2	12	0	3	12	0	5
	P-XYLENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	M-XYLENE	12	0	0	12	0	0	12	0	4	12	0	0	12	0	0	12	0	0
	O-XYLENE	12	0	0	12	0	0	12	0	6	12	0	0	12	0	1	12	0	1
	STYRENE	12	1	6	12	0	9	12	0	6	12	1	9	12	0	8	12	0	9
	1,1 DICHLOROETHYLENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	METHYLENE CHLORIDE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	T1,2DICHLOROETHYLENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	1,1 DICHLOROETHANE	12	0	0	12	0	0	12	0	7	12	0	0	12	0	0	12	1	6
	CHLOROFORM	12	0	1	12	12	0	12	3	9	12	0	2	12	3	9	12	3	8
	111, TRICHLOROETHANE	12	0	2	12	0	2	12	12	0	12	0	4	12	0	0	12	0	2
	1,2 DICHLOROETHANE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	CARBON TETRACHLORIDE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	1,2 DICHLOROPROPANE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	TRICHLOROETHYLENE	12	0	0	12	0	0	12	0	11	12	0	0	12	0	0	12	0	0
	DICHLOROBROMOMETHANE	12	0	0	12	11	1	12	8	4	12	0	1	12	8	4	12	8	4
	112 TRICHLOROETHANE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	CHLORODIBROMOMETHANE	12	0	0	12	6	5	12	6	6	12	0	1	12	8	4	12	7	5
	T-CHLOROETHYLENE	12	0	0	12	0	0	12	0	3	12	0	0	12	0	0	12	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE	K70 RAW		K70 TREATED			STRANGE ST RESERVOIR			K21 RAW		HANNHEIM RESERVOIR			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
VOLATILES	BROMOFORM	12	0	0	12	0	1	12	5	5	12	0	0	12	0	11	12	2	9
	1122 T-CHLOROETHANE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	CHLOROBENZENE	12	0	0	12	0	1	12	0	0	12	0	0	12	0	0	12	0	0
	1,4 DICHLOROBENZENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	1,3 DICHLOROBENZENE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	1,2 DICHLOROBENZENE	12	0	0	12	0	0	12	0	1	12	0	0	12	0	0	12	0	0
	ETHLYENE DIBROMIDE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	TOTL TRIHALOMETHANES	12	0	0	12	11	1	12	5	7	12	0	1	12	3	9	12	3	9
*TOTAL SCAN VOLATILES		348	1	12	348	40	24	348	39	81	348	1	21	348	22	53	348	24	67
*TOTAL GROUP ORGANIC		1169	10	26	1169	48	40	1168	43	87	1204	4	27	1168	26	58	871	24	67
TOTAL		1769	391	138	1805	460	153	1802	449	218	1806	347	149	1794	383	182	2008	794	253

KEY TO TABLE 5 and 6

A ONTARIO DRINKING WATER OBJECTIVES (ODWO)
1. Maximum Acceptable Concentration (MAC)
1+. MAC for Total Trihalomethanes
1*. MAC for Bacteriological Analyses
Poor water quality is indicated when :
- total coliform counts > 0 < 5
- P/A Bottle Test is present after 48 hours
- Aeromonas organisms are detected in more than 25% of samples in a single submission or in successive submissions from the same sampling site
- Pseudomonas Aeruginosa, Staphylococcus Aureus and members of the Fecal Streptococcus group should not be detected in any sample
- Standard Plate Count should not exceed 500 organisms per ml at 35 ^{0}C within 48 hours

2. Interim Maximum Acceptable Concentration (IMAC)
3. Maximum Desirable Concentration (MDC)
4. Aesthetic or Recommended Operational Guideline
- hardness levels between 80 and 100 mg/L as calcium carbonate are considered to provide an acceptable balance between corrosion and incrustation, water supplies with a hardness >200 mg/L are considered poor and those in excess of 500 mg/L are unacceptable.

B HEALTH & WELFARE CANADA (H&W)
1. Maximum Acceptable Concentration (MAC)
2. Proposed MAC
3. Interim MAC
4. Aesthetic Objective (AO) (for xylenes, a total)

C WORLD HEALTH ORGANIZATION (WHO)
1. Guideline Value (GV)
2. Tentative GV
3. Aesthetic GV

D US ENVIRONMENTAL PROTECTION AGENCY (EPA)
1. Maximum Contaminant Level (MCL)
2. Suggested No-Adverse Effect Level (SNAEL)
3. Lifetime Health Advisory
4. EPA Ambient Water Quality Criteria
5. Maximum Contaminant Level Goal (MCLG)

F EUROPEAN ECONOMIC COMMUNITY (EEC)
1. Health Related Guideline Level
2. Aesthetic Guideline Level
3. Maximum Admissable Concentration (MADC)

G CALIFORNIA STATE DEPARTMENT OF HEALTH-GUIDELINE VALUE

H USSR MAXIMUM PERMISSIBLE CONCENTRATION

I NEW YORK STATE AMBIENT WATER GUIDELINE

N/A NONE AVAILABLE

INTERPRETATION OF DATA

The interpretation of analytical results that are obtained from measurements near the limit of detection of the measurement process is subject to greater uncertainty than those at higher concentrations. The principle areas of concern relate to whether the substance has actually been detected, whether it has been properly identified, and whether it is an artifact of the measurement process. In other words, false positives can be caused by the instrumentation or the test procedures used, when in fact these compounds are not present in the sample.

There are several methods to treat data from such measurements:
1. Exclude the low-level data because of this uncertainty factor. Studies of long-term environmental trends and modelling may however, be adversely affected by the exclusion of such data.
2. Qualify these data so the user is aware of the greater uncertainty associated with their use.

For the Drinking Water Surveillance Program, measurements near the limit of detection of the measurement process are reported with the code "<T". Results qualified by "W" indicate a zero measurement. These results are reported for purposes of modelling and long-term trend analysis and no significance should be attributed to a single determination of a substance below "T" (a single determination may well be a false positive). Repeat analysis or additional data are needed before it can be stated with certainty that the substance in question was truly present. On the other hand, it is less likely that repeated detection of a substance at or near the limit of detection at a specific location is solely due to an artifact in the measurement system, and more likely represents a true positive. The average of such data however, is still only an estimate of the amount of substance present subject to the possible biases of the method used.

LABORATORY RESULTS, REMARK DESCRIPTIONS

.	No Sample Taken
BDL	Below Minimum Measurable Amount
<T	Greater Than Detection Limit But Not Confident (SEE INTERPRETATION OF RESULTS ABOVE)
>	Results Are Greater Than The Upper Limit
<=>	Approximate Result
!CS	No Data: Contamination Suspected
!IL	No Data: Sample Incorrectly Labelled
!IS	No Data: Insufficient Sample
!IV	No Data: Inverted Septum
!LA	No Data: Laboratory Accident
!LD	No Data: Test Queued After Sample Discarded

!IS	No Data: Insufficient Sample
!LA	No Data: Laboratory Accident
!LD	No Data: Test Queued After Sample Discarded
!NA	No Data: No Authorization To Perform Reanalysis
!NP	No Data: No Procedure
!NR	No Data: Sample Not Received
!OP	No Data: Obscured Plate
!QU	No Data: Quality Control Unacceptable
!PE	No Data: Procedural Error - Sample Discarded
!PH	No Data: Sample pH Outside Valid Range
!RE	No Data: Received Empty
!RO	No Data: See Attached Report (no numeric results)
!SM	No Data: Sample Missing
!SS	No Data: Send Separate Sample Properly Preserved
!UI	No Data: Indeterminant Interference
!TX	No Data: Time Expired
A3C	Approximate, Total Count Exceeded 300 Colonies
APL	Additional Peak, Large, Not Priority Pollutant
APS	Additional Peak, Less Than, Not Priority Pollutant
CIC	Possible Contamination, Improper Cap
CRO	Calculated Result Only
PPS	Test Performed On Preserved Sample
RMP	P and M-Xylene Not Separated
RRV	Rerun Verification
RVU	Reported Value Unusual
SPS	Several Peaks, Small, Not Priority Pollutant
UCR	Unreliable: Could Not Confirm By Reanalysis
UCS	Unreliable: Contamination Suspected
UIN	Unreliable: Indeterminant Interference
XP	Positive After X Number of Hours

T# (T06) Result Taken After # Hours

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1989

TYPE	K21 RAW	HANNHEIN RESERVOIR STANDING	SITE 1 FREE FLOW	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
BACTERIOLOGICAL						
FECAL COLIFORM MF (CT/100ML)		DET'N LIMIT = 0	GUIDELINE = 0 (A1)			
JAN	0 T06	.	.	.	0 T06	.
FEB	0 T24	.	.	.	0 T24	.
MAR	0 T06	.	.	.	0 T06	.
APR	0 T24	.	.	.	0 T24	.
MAY	0	.	.	.	0	.
JUN	0	.	.	.	0	.
JUL	0	.	.	.	0	.
AUG	.	0	.	.	0	.
SEP	0	.	.	.	0	.
OCT	0	.	.	.	0	.
NOV	0	.	.	.	1	.
DEC	0	.	.	.	0	.
STANDARD PLATE CNT MF (CT/ML)		DET'N LIMIT = 0	GUIDELINE = 500/ML (A1)			
JAN	.	3 <=>	5 <=>	0 <=>	.	2 <=>
FEB	.	0 <=>	51 T24	0 <=>	.	0 <=>
MAR	.	4 <=>	5 <=>	3 <=>	.	3 <=>
APR	.	1 <=>	1 <=>	0 <=>	.	3 <=>
MAY	.	0 <=>	2 <=>	1 <=>	.	6 <=>
JUN	.	0 <=>	145	29	.	1 <=>
JUL	.	1 <=>	22	11	.	0 <=>
AUG	1 <=>	.	19	10	.	1 <=>
SEP	.	1 <=>	420	1 <=>	.	6 <=>
OCT	.	3 <=>	50	9 <=>	.	1 <=>
NOV	.	4 <=>	44	1 <=>	.	5 <=>
DEC	.	0 <=>	0 <=>	0 <=>	.	19

	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
TOTAL COLIFORM MF (CT/100ML)	**DET'N LIMIT = 0**		**GUIDELINE = 5/100ML(A1)**			
JAN	0 T06	0 T06	0 T06	0 T06	0 T06	0 T06
FEB	0 T24	0 T24	0 T24	0 T24	0 T24	0 T24
MAR	0 T06	0 T06	0 T06	0 T06	1 T06	0 T06
APR	0 T24	0 T24	0 T24	0 T24	7 T24	0 T24
MAY	0	0	0	0	0	0
JUN	0	0	0	3	0	0
JUL	0	0	0	0	0	0
AUG	0	0	0	0	0	0
SEP	0	0	0	0	1	0
OCT	0	0	0	0	0	0
NOV	0	0	0	0	7	0
DEC	0	0	0	0	0	0
T COLIFORM BCKGRD MF (CT/100ML)	**DET'N LIMIT = 0**		**GUIDELINE = N/A**			
JAN	0 T06	0 T06	25 T06	0 T06	0 T06	0 T06
FEB	0 T24	0 T24	0 T24	0 T24	0 T24	0 T24
MAR	0 T06	0 T06	0 T06	0 T06	1 T06	0 T06
APR	0 T24	0 T24	0 T24	0 T24	6 T24	0 T24
MAY	0	0	0	0	1	0
JUN	0	0	1	540 A3C	0	0
JUL	0	0	0	190	0	0
AUG	0	0	1	2	0	0
SEP	1	0	0	0	0	0
OCT	0	0	0	0	0	0
NOV	0	0	0	0	9	0
DEC	0	0	0	0	0	0

SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
CHEMISTRY (FLD)							
FLD CHLORINE (COMB) (MG/L)		DET'N LIMIT = N/A		GUIDELINE = N/A			
JAN	.	.	.	.	.100	.	.100
FEB	.	.	.	.	.100	.	.100
MAR	.	.100	.	.100	.100	.	.100
APR	.	.000	.100	.100	.100	.	.100
MAY	.	.200	.	.	.100	.	.200
JUN	.	.100	.000	.000	.010	.	.300
JUL	.	.200	.000	.000	.100	.	.200
AUG	.000	.	.000	.000	.000	.	.100
SEP	.	.100	.000	.000	.100	.	.300
OCT	.	.000	.000	.000	.100	.	.300
NOV	.	.000	.000	.000	.000	.	.200
DEC	.	.	.000	.000	.	.	.200
FLD CHLORINE FREE (MG/L)		DET'N LIMIT = N/A		GUIDELINE = N/A			
JAN	.	.	.	.	.100	.	.600
FEB	.	.	.	.	.100	.	.600
MAR	.	.300	.	.100	.200	.	.700
APR	.	.300	.	.	.400	.	.600
MAY	.	.100	.	.	.200	.	.400
JUN	.	.200	.000	.000	.010	.	.400
JUL	.	.000	.000	.000	.000	.	.400
AUG	.000	.	.000	.000	.000	.	.300
SEP	.	.000	.000	.000	.000	.	.100
OCT	.	.000	.000	.000	.000	.	.400
NOV	.	.000	.000	.000	.000	.	.300
DEC	.	.	.000	.000	.	.	.100
FLD CHLORINE (TOTAL) (MG/L)		DET'N LIMIT = N/A		GUIDELINE = N/A			
JAN	.	.100	.	.	.200	.	.700
FEB	.	.100	.	.	.200	.	.700
MAR	.	.400	.	.200	.300	.	.800
APR	.	.300	.100	.100	.500	.	.700
MAY	.	.300	.	.	.300	.	.600
JUN	.	.300	.000	.000	.020	.	.700
JUL	.	.200	.000	.000	.100	.	.600
AUG	.000	.	.000	.000	.000	.	.400
SEP	.	.100	.000	.000	.100	.	.400
OCT	.	.000	.000	.000	.100	.	.700
NOV	.	.000	.000	.000	.000	.	.500
DEC	.	.	.000	.000	.000	.	.300

	SITE	K21 RAW	HANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
	TYPE		STANDING	FREE FLOW			
FLD PH (DIMNSLESS)		DET'N LIMIT = N/A		GUIDELINE = 6.5-8.5(A4)			
JAN		7.300	7.500	7.500	7.300	7.500	7.500	7.500
FEB		7.300	7.400	7.500	7.300	7.100	7.300	7.500
MAR		7.500	7.500	7.500	7.400	7.300	7.500	7.500
APR		7.300	7.500	7.500	7.400	7.300	7.300	7.500
MAY		7.500	7.300	.	.	7.300	7.500	7.500
JUN		7.300	7.500	7.500	7.500	7.300	7.300	7.500
JUL		7.500	7.500	7.500	7.500	7.300	7.500	7.500
AUG		.	.000	7.500	7.500	7.300	7.500	7.400
SEP		7.500	7.500	7.500	7.400	7.300	7.400	7.400
OCT		7.500	7.500	7.500	7.500	7.500	7.600	7.500
NOV		7.500	7.500	7.500	7.500	7.100	7.500	7.500
DEC		7.300	7.500	7.500	7.500	7.300	7.300	7.500
FLD TEMPERATURE (DEG.C)		DET'N LIMIT = N/A		GUIDELINE = 15 (A1)			
JAN		8.500	8.000	17.000	9.000	9.000	9.000	8.000
FEB		9.000	8.000	16.000	8.000	9.000	8.000	7.000
MAR		9.000	8.000	15.000	8.000	10.000	8.000	5.000
APR		9.000	13.000	15.000	8.000	9.000	15.000	15.000
MAY		9.000	10.000	.	.	14.000	7.000	8.000
JUN		9.000	9.000	18.000	13.000	10.000	11.000	11.000
JUL		9.000	9.000	18.000	14.000	10.000	13.000	14.000
AUG		9.000	9.000	20.000	16.000	10.000	16.000	15.000
SEP		9.000	9.000	20.000	16.000	10.000	16.000	16.000
OCT		9.000	8.000	18.000	15.000	10.000	14.000	15.000
NOV		8.000	8.000	18.000	13.000	9.000	12.000	12.000
DEC		8.000	8.000	15.000	9.000	8.000	10.000	9.000

	SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
	TYPE		STANDING	FREE FLOW			
CHEMISTRY (LAB)							
ALKALINITY (MG/L)		DET'N LIMIT = .200		GUIDELINE = 30-500 (A4)			
JAN		286.300	278.700	336.300	316.900	336.000	233.100	231.100
FEB		281.200	269.700	328.900	299.900	331.800	231.600	232.300
MAR		241.100 USD	245.000 USD	239.000 USD	239.600 USD	272.100	224.300	235.600
APR		273.500	263.500	321.900	295.700	326.600	217.500	219.000
MAY		268.500	259.200	249.700	253.100	315.800	183.400	225.400
JUN		247.200	243.200	276.700	236.000	301.200	226.400	229.400
JUL		277.100	272.900	280.200	278.200	329.000	229.000	227.900
AUG		271.500	266.000	298.200	265.100	315.400	217.000	217.300
SEP		272.000	266.400	295.900	292.000	326.500	209.400	209.200
OCT		282.000	273.500	300.600	271.400	322.000	210.000	209.500
NOV		282.600	272.100	315.700	274.500	313.400	215.300	214.700
DEC		244.800	264.500	271.300	245.600	305.600	218.400	223.100
CALCIUM (MG/L)			DET'N LIMIT = .100		GUIDELINE = 100 (F2)			
JAN		89.000	92.000	137.000	121.000	130.000	79.600	82.600
FEB		91.800	96.200	145.000	118.000	128.000	79.800	81.000
MAR		89.200	97.200	107.000	105.000	124.000	83.200	83.000
APR		85.800	91.200	147.000	125.000	134.000	77.600	78.400
MAY		90.800	91.800	94.400	96.000	131.000	76.800	79.400
JUN		90.000	96.600	148.000	98.000	130.000	76.400	75.600
JUL		90.400	95.200	104.000	101.000	134.000	75.800	75.200
AUG		90.400	95.200	144.000	99.000	132.000	70.000	71.600
SEP		90.600	97.600	130.000	138.000	130.000	69.800	70.000
OCT		92.800	98.400	143.000	101.000	134.000	70.200	70.000
NOV		89.600	92.600	146.000	93.000	129.000	71.200	71.600
DEC		89.100	92.500	91.000	91.400	133.200	76.000	76.900
CHLORIDE (MG/L)			DET'N LIMIT = .200		GUIDELINE = 250 (A3)			
JAN		16.500	20.300	104.000	73.900	87.900	41.900	42.500
FEB		16.500	21.000	97.000	64.000	86.600	37.700	38.600
MAR		16.000	20.000	31.700	35.800	86.500	48.600	49.400
APR		15.400	19.800	107.000	67.600	87.800	33.500	33.900
MAY		15.300	20.000	19.700	19.800	91.200	36.100	37.000
JUN		15.900	22.700	96.200	29.700	92.600	35.500	36.500
JUL		16.000	22.000	31.000	25.000	89.300	33.400	34.100
AUG		16.200	21.000	99.500	25.000	87.500	34.000	34.600
SEP		16.400	20.500	78.400	92.200	90.000	36.900	37.400
OCT		16.300	21.200	99.400	30.400	89.700	36.900	38.400
NOV		16.200	20.200	100.000	20.900	89.900	32.700	33.100
DEC		16.500	19.600	19.500	19.500	89.400	32.700	32.800

SITE	K21 RAW	MANNHEIM RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
COLOUR (HZU)		DET'N LIMIT = .5		GUIDELINE = 5.0 (A3)			
JAN	BDL	BDL	3.000	1.500 <T	2.000 <T	4.000	3.000
FEB	BDL	BDL	4.000	1.500 <T	2.500	3.500	2.000 <T
MAR	1.000 <T	1.000 <T	1.500 <T	1.500 <T	5.000	4.000	3.000
APR	.500 <T	.500 <T	3.500	3.000	3.000	4.500	3.500
MAY	1.000 <T	1.000 <T	1.000 <T	1.000 <T	4.000	5.000	4.000
JUN	.500 <T	1.000 <T	3.500	1.000 <T	2.000 <T	5.500	5.500
JUL							
AUG	.500 <T	.500 <T	3.000	.500 <T	1.500 <T	7.000	6.500
SEP	.500 <T	.500 <T	2.500	3.500	1.000 <T	7.000	6.500
OCT	.500 <T	1.000 <T	4.000	1.000 <T	2.000 <T	5.500	5.500
NOV	.500 <T	.500 <T	4.000	.500 <T	1.500 <T	6.000	6.000
DEC	.500 <T	.500 <T	.500 <T	.500 <T	2.000 <T	6.000	5.500
CONDUCTIVITY (UMHO/CM)		DET'N LIMIT = 1		GUIDELINE = 400 (F2)			
JAN	642	659	1175	997	1044	669	672
FEB	642	657	1173	947	1040	659	662
MAR	588	622	700	717	962	697	714
APR	640	652	1184	968	1049	617	624
MAY	619	629	622	625	1020	653	625
JUN	591	630	1089	656	1007	612	622
JUL	626	656	725	686	1025	598	600
AUG	616	637	1116	662	995	572	575
SEP	627	652	1009	1077	1032	586	589
OCT	645	671	1154	728	1043	593	595
NOV	640	657	1157	668	1023	593	594
DEC	585	639	655	617	1015	606	619
FLUORIDE (MG/L)		DET'N LIMIT = .01		GUIDELINE = 2.400 (A1)			
JAN	.120	.080	.160	.100	.080	.120	.120
FEB	.120	.080	.100	.100	.080	.140	.160
MAR	.100	.060	.080	.080	.080	.120	.100
APR	.080	.080	.100	.060	.080	.100	.100
MAY	.100	.080	.080	.080	.100	.080	.120
JUN	.080	.040 <T	.060	.060	.020 <T	.060	.060
JUL	.100	.080	.080	.080	.080	.160	.160
AUG	.100	.080	.100	.080	.080	.140	.140
SEP	.100	.060	.100	.080	.080	.140	.140
OCT	.100	.040 <T	.100	.080	.100	.160	.140
NOV	.100	.080	.100	.080	.080	.120	.120
DEC	.080	.060	.060	.060	.120	.160	.140

SITE	K21 RAW	HANNHEIM RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
HARDNESS (MG/L)		DET'N LIMIT = .500		GUIDELINE = 80-100 (A4)			
JAN	336.000	337.000	512.000	452.000	480.000	298.000	308.000
FEB	342.000	346.000	535.000	437.000	473.000	299.000	299.000
MAR	340.000	351.000	385.000	381.000	460.000	311.000	310.000
APR	332.000	338.000	537.000	455.000	488.000	284.000	285.000
MAY	341.000	338.000	343.000	347.000	481.000	284.000	291.000
JUN	340.000	349.000	539.000	362.000	478.000	281.000	278.000
JUL	340.000	347.000	377.000	363.000	489.000	274.000	271.000
AUG	342.000	345.000	534.000	359.000	483.000	258.000	261.000
SEP	340.000	351.000	481.000	507.000	477.000	256.000	257.000
OCT	347.000	355.000	531.000	369.000	490.000	259.000	258.000
NOV	338.000	339.000	538.000	340.000	476.000	265.000	268.000
DEC	332.300	333.900	330.100	330.600	484.000	279.200	279.100
IONCAL (DIMNSLESS)		DET'N LIMIT = N/A		GUIDELINE = N/A			
JAN	3.597	4.032	5.690	3.689	1.753	3.250	.059
FEB	.234	.401	.691	2.035	1.067	2.207	2.252
MAR	11.720	10.170	14.150	10.800	8.007	2.096	1.196
APR	.271	.660	.475	1.315	1.984	.757	.742
MAY	3.435	.998	5.289	5.875	1.573	.908	.686
JUN	9.404	7.225	9.978	8.423	5.269	.964	2.736
JUL	1.189	.424	.316	.998	1.523	.965	1.233
AUG	2.257	.554	3.884	2.610	3.498	1.866	1.076
SEP	1.687	2.590	2.453	3.270	.403	.989	.340
OCT	1.035	1.669	2.951	1.022	3.539	1.206	1.439
NOV	1.574	2.129	2.888	2.763	2.516	2.904	1.417
DEC	2.996	3.098	5.670	1.567	4.829	2.843	4.486
LANGELIERS INDEX (DIMNSLESS)		DET'N LIMIT = N/A		GUIDELINE = N/A			
JAN	.753	.755	.904	.713	.987	.694	.796
FEB	1.098	1.060	1.239	1.121	1.125	.922	.940
MAR	1.163	1.164	.982	1.024	1.169	1.165	1.344
APR	1.067	1.117	1.305	1.199	1.248	.985	.962
MAY	1.255	1.274	1.230	1.213	1.365	.895	1.210
JUN	.988	1.028	1.137	1.030	1.082	1.076	1.017
JUL	1.116	1.221	1.237	1.223	1.302	1.089	1.063
AUG	1.108	1.150	1.166	1.145	1.199	1.064	1.044
SEP	1.159	1.241	1.184	1.141	1.325	1.016	1.036
OCT	1.274	1.285	1.155	1.190	1.312	1.109	1.096
NOV	1.270	1.177	1.185	1.162	1.165	1.116	1.067
DEC	1.240	1.215	1.298	1.179	1.228	1.239	1.132

	SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
	TYPE		STANDING	FREE FLOW			
MAGNESIUM (MG/L)		DET'N LIMIT = .050		GUIDELINE = 30 (F2)			
JAN		27.300	26.100	40.900	36.800	37.800	24.100	24.800
FEB		27.400	25.600	41.900	34.400	37.200	24.300	23.700
MAR		28.400	26.400	28.800	29.000	36.600	25.000	25.000
APR		28.700	26.900	41.500	35.000	37.700	21.800	21.600
MAY		27.700	26.400	26.100	26.200	37.500	22.200	22.600
JUN		28.000	26.100	41.400	28.000	37.000	21.900	21.700
JUL		27.700	26.500	28.200	27.200	37.300	20.600	20.400
AUG		28.200	26.100	42.400	27.200	37.100	20.300	20.000
SEP		27.600	26.100	37.800	39.700	37.300	19.800	20.100
OCT		28.000	26.600	42.200	28.300	37.900	20.400	20.100
NOV		27.700	26.200	42.400	26.300	37.200	21.100	21.500
DEC		26.700	25.000	25.000	24.850	36.750	21.750	21.200
SODIUM (MG/L)		DET'N LIMIT = .200		GUIDELINE = 200 (C3)			
JAN		8.800	9.200	51.200	36.200	40.200	24.000	24.000
FEB		8.600	9.000	49.000	31.600	39.400	20.600	21.200
MAR		8.600	9.000	16.800	17.600	39.800	28.000	28.400
APR		8.600	8.800	52.800	33.400	38.500	19.100	19.600
MAY		8.800	8.600	9.000	8.800	40.400	22.200	22.600
JUN		8.600	10.200	47.800	13.800	43.000	22.000	22.600
JUL		9.000	10.000	14.800	11.600	39.200	22.000	22.600
AUG		8.600	9.200	51.200	11.600	40.600	22.200	22.400
SEP		8.800	9.000	38.400	44.200	39.600	24.200	24.600
OCT		9.200	9.800	51.400	15.400	41.400	24.000	24.800
NOV		9.200	8.800	50.200	9.600	40.800	20.600	21.000
DEC		7.000	6.700	7.300	6.800	39.100	17.600	17.400
	AMMONIUM TOTAL (MG/L)			DET'N LIMIT = 0.002	GUIDELINE = .05 (F2)			
JAN		.004 <T	.004 <T	.004 <T	.012	.004 <T	.002 <T	.008 <T
FEB		BDL	BDL	BDL	.006 <T	BDL	.002 <T	.004 <T
MAR		BDL	BDL	BDL	BDL	BDL	BDL	.004 <T
APR		BDL	BDL	BDL	BDL	BDL	BDL	BDL
MAY		BDL	BDL	BDL	BDL	BDL	BDL	BDL
JUN		BDL	BDL	BDL	BDL	BDL	BDL	BDL
JUL		.004 <T	BDL	.002 <T	.004 <T	.010	.012	BDL
AUG		BDL	.004 <T	.004 <T	.004 <T	.012	.030	.030
SEP		BDL	BDL	BDL	.006 <T	.004 <T	.044	.042
OCT		BDL	BDL	BDL	BDL	.008 <T	.018	.020
NOV		BDL	BDL	BDL	BDL	BDL	BDL	BDL
DEC		BDL	BDL	BDL	BDL	BDL	BDL	BDL

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
NITRITE (MG/L)		**DET'N LIMIT = 0.001**		**GUIDELINE = 1.000 (A1)**		
JAN	.008	.002 <T	.003 <T	.003 <T	.003 <T	.003 <T	.003 <T
FEB	.009	.001 <T	.001 <T	.002 <T	.001 <T	.001 <T	BDL
MAR	.010	.003 <T	.005	.003 <T	.003 <T	.004 <T	.004 <T
APR	.010	.002 <T	.003 <T	.003 <T	.002 <T	.003 <T	.003 <T
MAY	.006	.001 <T	.002 <T	.001 <T	.001 <T	.001 <T	.001 <T
JUN	.009	.002 <T	.005	.003 <T	.001 <T	.003 <T	.003 <T
JUL	.012	.003 <T	.005	.003 <T	.003 <T	.004 <T	.005
AUG	.013	.007	.024	.008	.010	.007	.006
SEP	.007	.001 <T	.005	.012	.002 <T	.002 <T	.003 <T
OCT	.006	.001 <T	.002 <T	.001 <T	.003 <T	.011	.001 <T
NOV	.006	BDL	.001 <T	.001 <T	.002 <T	.002 <T	.001 <T
DEC	.005	.002 <T	.004 <T	.002 <T	.003 <T	.003 <T	.006
TOTAL NITRATES (MG/L)		**DET'N LIMIT = .020**		**GUIDELINE = 10.000 (A1)**		
JAN	.675	3.340	.220	1.250	.415	3.380	3.460
FEB	.665	3.460	.215	1.570	.415	3.110	3.090
MAR	.675	3.410	2.860	2.680	.415	3.030	3.060
APR	.645	3.150	.015 <T	1.260	.500	3.430	3.510
MAY	.660	3.160	3.080	3.080	.405	13.400	2.410
JUN	.695	4.050	.195	3.620	.395	.985	.970
JUL	.625	3.500	3.050	3.370	.385	.575	.575
AUG	.665	3.400	.170	3.380	.415	.275	.260
SEP	.655	3.270	1.120	.605	.360	.225	.245
OCT	.675	3.660	.200	3.080	.400	.380	.380
NOV	.650	3.540	.175	3.820	.410	1.830	1.840
DEC	3.600	3.560	3.490	3.510	.410	2.610	2.620
NITROGEN TOT KJELD (MG/L)		**DET'N LIMIT = .020**		**GUIDELINE = N/A**		
JAN	.050 <T	.080 <T	.200	.140	.100	.300	.280
FEB	.080 <T	.090 <T	.120	.060 <T	.090 <T	.240	.230
MAR	.040 <T	.080 <T	.120	.100	.090 <T	.280	.250
APR	.050 <T	.070 <T	.090 <T	.050 <T	.090 <T	.300	.290
MAY	.070 <T	.090 <T	.100	.130	.140	.290	.250
JUN	.040 <T	.070 <T	.170	.100	.100	.260	.240
JUL	.050 <T	.080 <T	.120	.090 <T	.100	.270	.250
AUG	.030 <T	.080 <T	.120	.090 <T	.080 <T	.280	.270
SEP	.040 <T	.070 <T	.130	.150	.070 <T	.290	.270
OCT	.040 <T	.080 <T	.120	.120	.090 <T	.240	.230
NOV	.040 <T	.150	.140	.100	.090 <T	.320	.320
DEC	.040 <T	.070 <T	.080 <T	.070 <T	.050 <T	.300	.300

	SITE	K21 RAW	HAHNHEIM RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
	TYPE			STANDING	FREE FLOW			
PH (DIMNSLESS)			DET'N LIMIT = N/A		GUIDELINE = 6.5-8.5(A4)			
JAN		7.820	7.820	7.740	7.620	7.840	7.900	7.990
FEB		8.160	8.120	8.060	8.060	7.990	8.130	8.140
MAR		8.300	8.260	8.050	8.100	8.130	8.370	8.530
APR		8.170	8.210	8.130	8.120	8.100	8.230	8.200
MAY		8.340	8.370	8.330	8.300	8.240	8.220	8.430
JUN		8.110	8.130	8.020	8.140	7.980	8.310	8.250
JUL		8.190	8.280	8.250	8.250	8.150	8.320	8.300
AUG		8.190	8.220	8.030	8.200	8.070	8.350	8.320
SEP		8.240	8.300	8.090	8.030	8.190	8.320	8.340
OCT		8.330	8.330	8.020	8.230	8.170	8.410	8.400.
NOV		8.340	8.250	8.020	8.230	8.050	8.400	8.350
DEC		8.370	8.300	8.380	8.300	8.110	8.490	8.370
PHOSPHORUS FIL REACT (MG/L)			DET'N LIMIT = .0005		GUIDELINE = N/A			
JAN		.001 <T	.000 <T	.	.	.001 <T	.000 <T	.003
FEB		.001 <T	.001 <T	.	.	.002 <T	.001 <T	.001 <T
MAR		.000 <T	.001 <T	.	.	.002 <T	.000 <T	.002
APR		.001 <T	.001 <T	.	.	.001 <T	.001 <T	.001 <T
MAY		.001 <T	.001 <T	.	.	.001 <T	.002 <T	.002 <T
JUN		BDL	BDL	.	.	.000 <T	BDL	BDL
JUL		BDL	BDL	.	.	BDL	BDL	BDL
AUG		BDL	BDL	.	.	BDL	BDL	BDL
SEP		.001 <T	.000 <T	.	.	.000 <T	.001 <T	.002 <T
OCT		BDL	BDL	.	.	.002 <T	.001 <T	.001 <T
NOV		BDL	BDL	.	.	BDL	BDL	BDL
DEC		BDL	BDL	.	.	BDL	BDL	BDL
PHOSPHORUS TOTAL (MG/L)			DET'N LIMIT = .002		GUIDELINE = .40 (F2)			
JAN		.002 <T	.002 <T	.	.	.003 <T	.003 <T	.006 <T
FEB		BDL	BDL	.	.	BDL	BDL	BDL
MAR		BDL	BDL	.	.	.003 <T	.003 <T	.004 <T
APR		.002 <T	.002 <T	.	.	.004 <T	.004 <T	.006 <T
MAY		BDL	BDL	.	.	.003 <T	.002 <T	.004 <T
JUN		.005 <T	.006 <T	.	.	.008 <T	.007 <T	.008 <T
JUL		.002 <T	.002 <T	.	.	.003 <T	.005 <T	.006 <T
AUG		BDL	.002 <T	.	.	BDL	.003 <T	.005 <T
SEP		.002 <T	.004 <T	.	.	.003 <T	.005 <T	.006 <T
OCT		.004 <T	.004 <T	.	.	.008 <T	.007 <T	.005 <T
NOV		.003 <T	.005 <T	.	.	.004 <T	.005 <T	.005 <T
DEC		BDL	.002 <T	.	.	.003 <T	.004 <T	.004 <T

SITE	K21 RAW	MANNHEIM RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
SULPHATE (MG/L)		DET'N LIMIT = .200		GUIDELINE = 500. (A3)			
JAN	52.340	50.240	166.500	121.400	111.500	54.990	54.660
FEB	52.500	49.920	163.400	114.700	104.600	53.550	53.680
MAR	52.430	49.210	72.930	76.040	106.250	57.770	57.650
APR	52.310	50.430	169.660	121.340	105.700	43.730	43.680
MAY	53.220	52.130	53.710	52.090	110.000	50.120	49.760
JUN	53.500	53.880	165.500	66.070	104.300	49.810	49.740
JUL	51.060	51.480	68.940	57.610	104.120	44.970	44.880
AUG	53.570	53.140	174.880	59.670	106.610	44.600	44.330
SEP	53.290	52.130	134.130	154.360	107.320	47.350	47.370
OCT	53.540	51.640	175.310	69.880	106.410	49.720	48.880
NOV	53.340	50.450	165.780	51.530	104.110	48.370	47.390
DEC	54.230	52.150	52.110	52.100	105.130	50.540	50.450
TURBIDITY (FTU)		DET'N LIMIT = .02		GUIDELINE = 1.00 (A1)			
JAN	.670	.940	.660	.530	.480	.470	.280
FEB	.930	.440	.890	.900	.490	4.300	.310
MAR	.430	.460	.630	.440	.510	.450	.300
APR	.480	1.210 USD	4.000 USD	3.450 USD	1.300 USD	.440	.760
MAY	.320	.250 <T	.480	.430	.460	.460	.520
JUN	.880	.420	1.780 RRV	.710	.580	1.030	.500
JUL	.350	.460	.840	.350	.470	.210	.430
AUG	.400	.920	1.500	1.080	.920	.660	.630
SEP	.630	.610	.650	.930	.630	.380	.570
OCT	.450	.950	.850	.240 <T	1.050	.130 <T	.190 <T
NOV	.200	.680	1.050	.240	.640	.060 <T	.080 <T
DEC	.200 <T	.450	.540	.500	.350	.090 <T	.060 <T

SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			

METALS

SILVER (µg/L)		DET'N LIMIT = .020		GUIDELINE = 50. (A1)			
JAN	BDL	BDL	BDL	BDL	BDL	BDL	BDL
FEB	.090 <T	BDL	.030 <T	BDL	.040 <T	.060 <T	.120 <T
MAR	.070 <T	.070 <T	.090 <T	.040 <T	.080 <T	.030 <T	.060 <T
APR	BDL	BDL	.040 <T	BDL	BDL	BDL	BDL
MAY	.060 <T	.100 <T	.100 <T	BDL	BDL	BDL	BDL
JUN	.050 <T	BDL	.120 <T	.030 <T	.070 <T	.040 <T	BDL
JUL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
AUG	.040 <T	BDL	.080 <T	BDL	BDL	BDL	BDL
SEP	BDL	BDL	BDL	BDL	BDL	BDL	BDL
OCT	BDL	BDL	.040 <T	BDL	BDL	BDL	BDL
NOV	BDL	BDL	.030 <T	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	BDL	BDL	BDL	BDL

ALUMINUM (µg/L)		DET'N LIMIT = .050		GUIDELINE = 100.(A4)			
JAN	2.800	1.700	3.800	1.900	2.600	1.800	1.500
FEB	7.500	7.800	8.000	8.600	5.900	3.600	3.200
MAR	7.600	7.000	7.800	7.100	7.800	4.400	4.300
APR	12.000	11.000	14.000	12.000	13.000	6.400	6.400
MAY	5.300	5.200	5.800	5.700	5.700	3.400	3.300
JUN	12.000	11.000	17.000	12.000	14.000	7.900	8.200
JUL	18.850	16.850	18.000	16.810	15.000	8.800	9.500
AUG	17.000	25.000	22.000	17.000	22.000	12.000	12.000
SEP	11.000	9.000	12.000	13.000	13.000	7.400	7.300
OCT	6.100	5.500	8.400	5.600	6.900	4.200	4.100
NOV	14.000	12.000	15.000	13.000	15.000	5.100	4.800
DEC	6.500	5.700	6.900	6.000	7.300	5.000	4.400

ARSENIC (µg/L)		DET'N LIMIT = 0.050		GUIDELINE = 50.0 (A1)			
JAN	.210 <T	BDL	.140 <T	BDL	.150 <T	BDL	.090 <T
FEB	.730 <T	.750 <T	1.700	1.000 <T	.790 <T	.090 <T	.290 <T
MAR	.600 <T	.700 <T	.670 <T	.820 <T	1.200	.360 <T	.820 <T
APR	.540 <T	.620 <T	1.000 <T	.620 <T	.320 <T	.210 <T	.320 <T
MAY	.420 <T	.800 <T	.810 <T	.720 <T	.610 <T	.160 <T	.390 <T
JUN	BDL	BDL	1.200	BDL	1.100	.570 <T	.500 <T
JUL	.490 <T	.710 <T	.880 <T	.680 <T	.680 <T	.170 <T	.250 <T
AUG	.650 <T	.670 <T	1.700	.690 <T	1.400	.770 <T	.560 <T
SEP	.560 <T	.510 <T	1.700	2.300	1.200	.750 <T	.700 <T
OCT	.150 <T	.290 <T	1.200	.360 <T	.490 <T	.120 <T	.190 <T
NOV	.460 <T	.520 <T	2.100	.690 <T	1.500	.130 <T	.500 <T
DEC	.300 <T	.400 <T	.470 <T	.380 <T	.800 <T	.480 <T	.270 <T

SITE	K21 RAW	HANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
BARIUM (µg/L)		**DET'N LIMIT = 0.020**	**GUIDELINE = 1000. (A1)**			
JAN	110.000	63.000	120.000	100.000	130.000	27.000	27.000
FEB	120.000	120.000	120.000	110.000	150.000	30.000	27.000
MAR	110.000	110.000	83.000	91.000	130.000	28.000	28.000
APR	110.000	110.000	130.000	110.000	130.000	26.000	25.000
MAY	100.000	100.000	81.000	86.000	130.000	27.000	27.000
JUN	120.000	120.000	140.000	100.000	140.000	30.000	29.000
JUL	118.000	119.000	104.000	105.000	130.000	27.000	27.000
AUG	120.000	110.000	140.000	97.000	150.000	29.000	30.000
SEP	110.000	110.000	110.000	110.000	150.000	28.000	27.000
OCT	110.000	110.000	120.000	89.000	130.000	28.000	27.000
NOV	120.000	110.000	120.000	96.000	140.000	25.000	26.000
DEC	110.000	110.000	80.000	100.000	150.000	31.000	29.000
BORON (µg/L)		**DET'N LIMIT = 0.200**	**GUIDELINE = 5000. (A1)**			
JAN	96.000	30.000	85.000	75.000	110.000	83.000	73.000
FEB	140.000	150.000	65.000	170.000	150.000	74.000	25.000
MAR	210.000	210.000	230.000	230.000	260.000	200.000	200.000
APR	570.000	570.000	560.000	640.000	690.000	410.000	450.000
MAY	30.000	54.000	64.000	65.000	73.000	58.000	58.000
JUN	57.000	48.000	77.000	60.000	79.000	65.000	65.000
JUL	91.900	83.500	89.000	88.700	100.000	77.000	79.000
AUG	87.000	110.000	110.000	57.000	130.000	95.000	110.000
SEP	76.000	41.000	89.000	98.000	110.000	57.000	54.000
OCT	22.000	23.000	57.000	21.000	41.000	44.000	38.000
NOV	53.000	53.000	42.000	22.000	85.000	23.000	24.000
DEC	15.000 <T	14.000 <T	11.000 <T	12.000 <T	38.000	46.000	37.000
BERYLLIUM (µg/L)		**DET'N LIMIT = 0.010**	**GUIDELINE = N/A**			
JAN	.270 <T	BDL	.060 <T	.080 <T	.220 <T	.180 <T	.070 <T
FEB	.400 <T	.420 <T	.050 <T	.300 <T	.310 <T	.180 <T	BDL
MAR	.550	.430 <T	.470 <T	.620	.530	.480 <T	.380 <T
APR	.380 <T	.540	.390 <T	.440 <T	.730	.360 <T	.550
MAY	.030 <T	.170 <T	.150 <T	.250 <T	.360 <T	.170 <T	.280 <T
JUN	.090 <T	.080 <T	.100 <T	.200 <T	.210 <T	.210 <T	.210 <T
JUL	.340 <T	.290 <T	.350 <T	.300 <T	.330 <T	.130 <T	.320 <T
AUG	.240 <T	.300 <T	.260 <T	.170 <T	.360 <T	.320 <T	.330 <T
SEP	.230 <T	.080 <T	.160 <T	.180 <T	.210 <T	.110 <T	.060 <T
OCT	.040 <T	.060 <T	.110 <T	.040 <T	.050 <T	.080 <T	.030 <T
NOV	.110 <T	.180 <T	.020 <T	BDL	.140 <T	BDL	.050 <T
DEC	BDL	BDL	BDL	BDL	BDL	.080 <T	BDL

SITE	K21 RAW	HANNHEIN RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
CADMIUM (µg/L)		DET'N LIMIT = 0.050	GUIDELINE = 5.000 (A1)			
JAN	BDL	BDL	.090 <T	BDL	BDL	BDL
FEB	.260 <T	BDL	.150 <T	.150 <T	.140 <T	BDL
MAR	BDL	.090 <T	.140 <T	BDL	.080 <T	BDL
APR	BDL	BDL	.130 <T	.120 <T	.080 <T	BDL
MAY	.060 <T	BDL	.100 <T	BDL	.070 <T	BDL
JUN	BDL	BDL	.200 <T	BDL	.170 <T	.080 <T
JUL	BDL	BDL	BDL	BDL	.120 <T	.150 <T
AUG	.100 <T	BDL	.180 <T	.090 <T	.140 <T	.210 <T
SEP	BDL	.060 <T	.080 <T	.070 <T	.100 <T	.070 <T
OCT	BDL	BDL	.070 <T	BDL	BDL	BDL
NOV	BDL	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	BDL	BDL	BDL
COBALT (µg/L)		DET'N LIMIT = 0.020	GUIDELINE = N/A			
JAN	.210 <T	.100 <T	.300 <T	.240 <T	.510 <T	.160 <T
FEB	.230 <T	.230 <T	.300 <T	.310 <T	.540 <T	.290 <T
MAR	.040 <T	BDL	BDL	BDL	.120 <T	.090 <T
APR	BDL	BDL	BDL	BDL	.200 <T	BDL
MAY	.160 <T	.320 <T	.360 <T	.380 <T	.750 <T	.390 <T
JUN	BDL	BDL	BDL	BDL	.250 <T	.050 <T
JUL	.260 <T	.200 <T	.250 <T	.250 <T	.270 <T	.050 <T
AUG	BDL	BDL	BDL	BDL	.130 <T	BDL
SEP	BDL	BDL	BDL	BDL	.170 <T	.090 <T
OCT	.070 <T	BDL	.040 <T	.080 <T	.430 <T	.230 <T
NOV	BDL	BDL	BDL	BDL	.250 <T	BDL
DEC	BDL	BDL	BDL	BDL	.420 <T	.160 <T
CHROMIUM (µg/L)		DET'N LIMIT = 0.100	GUIDELINE = 50. (A1)			
JAN	16.000	3.900	10.000	10.000	13.000	10.000
FEB	23.000	24.000	5.600	24.000	27.000	11.000
MAR	19.000	19.000	20.000	20.000	22.000	17.000
APR	18.000	18.000	18.000	21.000	22.000	13.000
MAY	6.800	17.000	18.000	19.000	21.000	17.000
JUN	12.000	10.000	13.000	13.000	14.000	11.000
JUL	16.220	15.480	15.270	15.740	20.000	13.000
AUG	15.000	12.000	16.000	8.100	19.000	12.000
SEP	18.000	8.500	19.000	20.000	23.000	7.800
OCT	3.200	4.200	9.800	2.400	5.600	7.100
NOV	6.000	6.100	1.400	1.200	8.100	BDL
DEC	BDL	.790 <T	BDL	BDL	1.500 <T	5.600

	.950 <T
	4.600
	7.100
	14.000
	13.000
	11.000
	17.000
	13.000
	14.000
	3.400 <T

SITE	K21 RAW	MANNHEIN RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
COPPER (µg/L)		DET'N LIMIT = .100		GUIDELINE = 1000 (A3)			
JAN	.620 <T	6.100	150.000	13.000	3.200	3.300	130.000
FEB	.900 <T	2.700	110.000	12.000	4.400	3.700	170.000
MAR	.910 <T	2.700	96.000	10.000	2.200	3.900	140.000
APR	.820 <T	1.800	110.000	8.400	1.800	3.000	130.000
MAY	.600 <T	4.300	78.000	7.500	2.300	3.300	140.000
JUN	.950 <T	1.800	120.000	11.000	1.800	4.300	130.000
JUL	.780 <T	1.670	76.000	11.450	2.400	5.600	130.000
AUG	1.000 <T	1.500	130.000	12.000	2.900	5.400	120.000
SEP	.770 <T	1.600	110.000	17.000	2.800	5.400	140.000
OCT	.680 <T	1.200	110.000	12.000	4.300	4.400	60.000
NOV	.610 <T	1.100	99.000	9.600	2.000	3.900	110.000
DEC	.550 <T	1.000 <T	56.000	7.000	2.500 <T	4.200 <T	49.000
IRON (µg/L)		DET'N LIMIT = 4.000		GUIDELINE = 300. (A3)			
JAN	BDL	16.000 <T	260.000	66.000	110.000	BDL	BDL
FEB	BDL	BDL	250.000	54.000	110.000	BDL	BDL
MAR	BDL	BDL	57.000	6.700 <T	110.000	BDL	BDL
APR	BDL	BDL	330.000	130.000	110.000	BDL	BDL
MAY	BDL	BDL	BDL	BDL	80.000	BDL	BDL
JUN	BDL	15.000 <T	310.000	25.000 <T	110.000	BDL	BDL
JUL	BDL	9.290 <T	62.000	BDL	100.000	BDL	BDL
AUG	BDL	7.100 <T	190.000	18.000 <T	120.000	BDL	BDL
SEP	BDL	7.400 <T	190.000	370.000	120.000	BDL	BDL
OCT	BDL	7.100 <T	320.000	26.000 <T	220.000	BDL	BDL
NOV	BDL	5.400 <T	330.000	16.000 <T	110.000	13.000 <T	BDL
DEC	BDL	BDL	6.200 <T	BDL	110.000	BDL	BDL
MERCURY (µg/L)		DET'N LIMIT = 0.010		GUIDELINE = 1.000 (A1)			
JAN	BDL	BDL	.	BDL	BDL	BDL	BDL
FEB	BDL	BDL	.	BDL	BDL	BDL	BDL
MAR	BDL	BDL	.	.020 <T	BDL	BDL	BDL
APR	BDL	.020 <T	.	BDL	BDL	BDL	BDL
MAY	BDL	BDL	.	BDL	BDL	BDL	BDL
JUN	BDL	BDL	.	BDL	BDL	BDL	BDL
JUL	BDL	BDL	.	BDL	.020 <T	.020 <T	.020 <T
AUG	.050 <T	.040 <T	.	.040 <T	.040 <T	.040 <T	.040 <T
SEP	.030 <T	.030 <T	.	.040 <T	.040 <T	.040 <T	.040 <T
OCT	.070	.070	.	.050 <T	.060	.060	.050 <T
NOV	.020 <T	.020 <T	.	.030 <T	BDL	BDL	BDL
DEC	.020 <T	.020 <T	.	.020 <T	.020 <T	.020 <T	.020 <T

SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
MANGANESE (µg/L)		**DET'N LIMIT = .050**	**GUIDELINE = 50.0 (A3)**			
JAN	11.000	.740	58.000	60.000	97.000	2.600	2.300
FEB	12.000	5.900	56.000	61.000	110.000	2.200	2.800
MAR	11.000	3.400	42.000	35.000	91.000	.920	.820
APR	9.600	4.200	130.000	69.000	90.000	.630	.460 <T
MAY	9.700	28.000	27.000	5.700	93.000	.680	.600
JUN	11.000	12.000	120.000	77.000	110.000	1.300	1.200
JUL	11.600	12.570	67.000	63.700	110.000	4.200	4.000
AUG	12.000	11.000	150.000	51.000	120.000	38.000	39.000
SEP	12.000	12.000	93.000	260.000	130.000	77.000	74.000
OCT	11.000	12.000	110.000	69.000	110.000	83.000	84.000
NOV	11.000	11.000	130.000	13.000	100.000	32.000	32.000
DEC	11.000	9.800	20.000	6.700	110.000	2.400	2.100
MOLYBDENUM (µg/L)		**DET'N LIMIT = 0.020**	**GUIDELINE = N/A**			
JAN	.800	.560	.480 <T	.560	.520	.760	.580
FEB	1.100	.960	.840	.950	.940	1.100	.960
MAR	1.000	.960	.830	.920	.980	.900	.920
APR	.880	.720	.710	.740	.680	.680	.680
MAY	.780	.270 <T	.890	.910	.780	.730	.920
JUN	.910	.680	.840	.900	.810	.870	.820
JUL	1.060	.810	1.040	.990	.940	1.400	1.300
AUG	.940	.750	.970	.780	.800	1.800	1.800
SEP	.730	.600	.690	.690	.620	1.800	1.800
OCT	.750	.600	.660	.620	.610	1.700	1.700
NOV	.670	.530	.610	.510	.570	1.100	1.000
DEC	.750	.550	.580	.530	.500 <T	.890	.830
NICKEL (µg/L)		**DET'N LIMIT = 0.100**	**GUIDELINE = 50. (F3)**			
JAN	.330 <T	BDL	9.300	.670 <T	1.300 <T	.860 <T	1.000 <T
FEB	2.100	2.300	10.000	3.200	2.400	1.500 <T	.650 <T
MAR	.800 <T	BDL	4.200	BDL	BDL	1.100 <T	1.400 <T
APR	BDL	BDL	1.900 <T	BDL	BDL	BDL	BDL
MAY	3.800	6.100	6.100	6.000	7.100	4.800	5.400
JUN	BDL	BDL	6.300	.450 <T	1.600 <T	1.800 <T	2.900
JUL	3.030	2.950	6.260	3.000	1.400 <T	.680 <T	1.300 <T
AUG	BDL	BDL	4.600	BDL	BDL	.110 <T	BDL
SEP	BDL	BDL	2.900	.490 <T	BDL	.830 <T	.710 <T
OCT	BDL	BDL	.590 <T	BDL	BDL	BDL	BDL
NOV	BDL	BDL	2.800	BDL	.400 <T	BDL	BDL
DEC	BDL	BDL	.810 <T	BDL	BDL	.760 <T	1.500 <T

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
LEAD (µg/L)		**DET'N LIMIT = 0.050**	**GUIDELINE = 50. (A1)**			
JAN	.120 <T	.030 <T	18.000	.850	.190 <T	.120 <T	.750
FEB	BDL	.210	8.000	.640	.400	.270	1.600
MAR	.270	.250	6.100	.790	.150 <T	.270	.770
APR	.310	.040 <T	20.000	.430	.100 <T	.670	1.200
MAY	.650	.730	4.000	.500	.420	.320	1.400
JUN	.260	.220	10.000	.710	.210	.210	1.400
JUL	.220	.290	5.380	.940	.130 <T	.460	1.000
AUG	.410	.120 <T	7.600	.650	.230	.350	1.300
SEP	.110 <T	.050 <T	5.400	.320	.040 <T	.110 <T	.580
OCT	.200 <T	.150 <T	8.100	.320	1.300	.190 <T	.680
NOV	BDL	.030 <T	7.400	.270	.240	.290	.880
DEC	.070 <T	BDL	1.800	.160 <T	.180 <T	.670	.850
ANTIMONY (µg/L)		**DET'N LIMIT = .050**	**GUIDELINE = 146. (D4)**			
JAN	.330	.300	.490	.360	.260	.300	.300
FEB	.700	.550	.610	.600	.740	.600	.570
MAR	.510	.670	.680	.550	.490	.490	.570
APR	.480	.410	.620	.430	.410	.500	.540
MAY	.760	.690	1.100	.620	.550	.770	.630
JUN	.610	.710	.930	.640	.690	.630	.750
JUL	.620	.520	.940	.630	.530	.700	.730
AUG	.660	.600	.790	.580	.600	.520	.580
SEP	.400	.470	.540	.390	.380	.360	.400
OCT	.390	.390	.560	.420	.380	.380	.430
NOV	.260	.260	.460	.300	.320	.290	.280
DEC	.360 <T	.400 <T	.500 <T	.400 <T	.360 <T	.400 <T	.420 <T
SELENIUM (µg/L)		**DET'N LIMIT = 0.200**	**GUIDELINE = 10. (A1)**			
JAN	.370 <T	.790 <T	.490 <T	.310 <T	1.300 <T	.430 <T	.610 <T
FEB	1.700 <T	2.800 <T	1.400 <T	2.000 <T	3.700 <T	BDL	.850 <T
MAR	1.700 <T	3.100 <T	3.600 <T	6.800 <T	4.300 <T	1.900 <T	2.700 <T
APR	2.400 <T	2.900 <T	6.000 <T	5.800 <T	3.800 <T	2.800 <T	2.200 <T
MAY	1.600 <T	3.100 <T	6.600 <T	4.500 <T	8.400 <T	1.800 <T	2.600 <T
JUN	BDL	1.700 <T	2.300 <T	BDL	2.900 <T	2.500 <T	1.700 <T
JUL	BDL	BDL	BDL	BDL	1.300 <T	BDL	1.100 <T
AUG	2.300 <T	BDL	2.200 <T	1.500 <T	2.900 <T	1.600 <T	2.800 <T
SEP	BDL	BDL	1.200 <T	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NOV	BDL	1.300 <T	2.100 <T	BDL	1.600 <T	BDL	1.500 <T
DEC	BDL	BDL	BDL	1.200 <T	BDL	BDL	1.200 <T

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
STRONTIUM (µg/L)		**DET'N LIMIT = .050**	**GUIDELINE = N/A**			
JAN	240.000	120.000	1200.000	850.000	550.000	520.000	520.000
FEB	270.000	210.000	1300.000	930.000	690.000	680.000	600.000
MAR	260.000	200.000	810.000	570.000	590.000	580.000	600.000
APR	240.000	180.000	1100.000	820.000	590.000	490.000	490.000
MAY	240.000	200.000	470.000	260.000	550.000	490.000	500.000
JUN	270.000	220.000	1300.000	460.000	740.000	580.000	580.000
JUL	257.000	210.000	635.000	453.000	680.000	550.000	550.000
AUG	290.000	210.000	1500.000	400.000	730.000	540.000	560.000
SEP	270.000	200.000	1200.000	1300.000	730.000	530.000	520.000
OCT	250.000	200.000	1400.000	540.000	620.000	500.000	490.000
NOV	250.000	200.000	1400.000	240.000	640.000	510.000	510.000
DEC	250.000	190.000	360.000	200.000	690.000	550.000	540.000
TITANIUM (µg/L)		**DET'N LIMIT = .050**	**GUIDELINE = N/A**			
JAN	17.000	11.000	20.000	17.000	19.000	13.000	11.000
FEB	14.000	14.000	16.000	18.000	16.000	9.900	11.000
MAR	14.000	15.000	15.000	15.000	18.000	11.000	13.000
APR	15.000	16.000	21.000	19.000	20.000	12.000	13.000
MAY	18.000	17.000	19.000	18.000	20.000	13.000	11.000
JUN	22.000	21.000	27.000	22.000	26.000	16.000	17.000
JUL	20.980	20.000	21.800	21.100	24.000	13.000	14.000
AUG	21.000	18.000	29.000	21.000	29.000	17.000	16.000
SEP	12.000	10.000	14.000	15.000	15.000	8.500	8.500
OCT	17.000	15.000	21.000	16.000	19.000	10.000	11.000
NOV	11.000	11.000	15.000	11.000	15.000	6.800	7.200
DEC	13.000	12.000	12.000	13.000	19.000	10.000	9.700
THALLIUM (µg/L)		**DET'N LIMIT = .010**	**GUIDELINE = 13. (D4)**			
JAN	BDL	BDL	BDL	BDL	.030 <T	.020 <T	.020 <T
FEB	.110 <T	.020 <T	.060 <T	.100 <T	.030 <T	.030 <T	BDL
MAR	BDL	BDL	BDL	BDL	BDL	BDL	BDL
APR	.080 <T	.020 <T	.030 <T	BDL	.030 <T	BDL	.090 <T
MAY	.160 <T	.220	.160 <T	BDL	.030 <T	.030 <T	.050 <T
JUN	.030 <T	BDL	BDL	BDL	.030 <T	BDL	.040 <T
JUL	.100 <T	.100 <T	.120 <T	.060 <T	.050 <T	.030 <T	.060 <T
AUG	.040 <T	BDL	.040 <T	BDL	.070 <T	BDL	.040 <T
SEP	BDL	.020 <T	BDL	BDL	BDL	.030 <T	BDL
OCT	.020 <T	BDL	.020 <T	BDL	.030 <T	BDL	.040 <T
NOV	.030 <T	BDL	.030 <T	BDL	.040 <T	.070 <T	.070 <T
DEC	BDL	BDL	BDL	BDL	BDL	BDL	BDL

SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
URANIUM (µg/L)		**DET'N LIMIT = .020**	**GUIDELINE = 20. (A2)**			
JAN	.970	.590	1.600	1.300	1.500	.700	.720
FEB	1.400	1.400	2.000	1.700	2.000	1.100	1.300
MAR	1.200	1.200	1.200	1.200	1.600	.940	.940
APR	1.100	1.200	1.700	1.400	1.700	.900	.880
MAY	1.000	1.100	1.100	.960	1.700	.950	.890
JUN	1.300	1.500	1.900	1.500	1.900	.950	.930
JUL	1.330	1.580	1.610	1.610	1.800	.900	.920
AUG	1.100	1.300	1.700	1.400	1.700	.820	.850
SEP	.850	.960	1.300	1.200	1.400	.500	.480
OCT	.950	1.100	1.500	1.200	1.500	.620	.590
NOV	.970	1.200	1.500	1.200	1.500	.630	.670
DEC	.960	1.200	.990	1.000	1.500	.850	.860
VANADIUM (µg/L)		**DET'N LIMIT = .050**	**GUIDELINE = N/A**			
JAN	.330 <T	.180 <T	.240 <T	.210 <T	.280 <T	.220 <T	.210 <T
FEB	.320 <T	.240 <T	.240 <T	.240 <T	.330 <T	.250 <T	.220 <T
MAR	.290 <T	.220 <T	.100 <T	.100 <T	.150 <T	.130 <T	.110 <T
APR	.280 <T	.180 <T	.060 <T	.110 <T	.150 <T	.160 <T	.170 <T
MAY	.410 <T	.310 <T	.220 <T	.270 <T	.710	.520	.430 <T
JUN	.300 <T	.130 <T	.080 <T	.090 <T	.200 <T	.210 <T	.240 <T
JUL	.390 <T	.250 <T	.250 <T	.230 <T	.500 <T	.360 <T	.390 <T
AUG	.360 <T	.250 <T	.470 <T	.230 <T	.610	.370 <T	.410 <T
SEP	.420 <T	.290 <T	.500 <T	.560	.660	.390 <T	.370 <T
OCT	.260 <T	.170 <T	.150 <T	.090 <T	.260 <T	.170 <T	.180 <T
NOV	.430 <T	.350 <T	.690	.300 <T	.750	.210 <T	.120 <T
DEC	.340 <T	.340 <T	.230 <T	.270 <T	.270 <T	.320 <T	.280 <T
ZINC (µg/L)		**DET'N LIMIT = .001**	**GUIDELINE = 5000. (A3)**			
JAN	7.600	1.400	58.000	8.000	24.000	4.700	3.800
FEB	7.700	7.100	45.000	7.100	28.000	5.000	4.300
MAR	7.900	5.900	27.000	5.900	17.000	5.500	5.200
APR	7.200	5.100	27.000	5.900	12.000	3.300	3.200
MAY	7.600	8.600	14.000	4.600	14.000	5.000	5.300
JUN	7.900	5.500	45.000	7.500	13.000	5.100	5.100
JUL	7.980	5.390	20.590	6.840	14.000	7.400	6.300
AUG	7.800	4.600	39.000	5.100	13.000	5.900	5.300
SEP	6.600	3.900	21.000	6.900	13.000	6.000	5.400
OCT	6.400	4.500	20.000	4.700	14.000	5.900	5.200
NOV	6.000	3.500	20.000	3.200	11.000	4.100	3.500
DEC	7.200	4.000	12.000	4.000	13.000	6.600	3.500

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
PESTICIDES & PCB						
ALPHA BHC (NG/L)		DET'N LIMIT = 1.000	GUIDELINE = 700 (G)			
JAN	BDL	BDL	BDL	BDL	BDL	BDL
FEB	BDL	BDL	BDL	BDL	BDL	BDL
MAR	BDL	BDL	BDL	BDL	BDL	BDL
APR	BDL	BDL	BDL	BDL	BDL	BDL
MAY	BDL	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	BDL	BDL	BDL	BDL
JUL	BDL	BDL	BDL	BDL	BDL	BDL
AUG	BDL	BDL	BDL	IQU	IQU	IQU
SEP	BDL	BDL	BDL	1.000 <T	BDL	BDL
OCT	BDL	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	BDL	BDL	BDL	BDL
DEC	BDL	ILA	BDL	BDL	BDL	BDL
ATRAZINE (NG/L)		DET'N LIMIT = 50.00	GUIDELINE = 60000 (83)			
JAN	BDL	BDL	BDL	BDL	BDL	BDL
FEB	BDL	BDL	BDL	BDL	BDL	BDL
MAR	BDL	BDL	BDL	BDL	BDL	BDL
APR	BDL	BDL	BDL	BDL	290.000 <T	275.000 <T
MAY	BDL	BDL	BDL	BDL	320.000 <T	380.000 <T
JUN	BDL	BDL	BDL	BDL	1270.000	550.000
JUL	BDL	BDL	BDL	BDL	190.000 <T	260.000 <T
AUG	BDL	BDL	.	BDL	690.000	550.000
SEP	BDL	BDL	.	BDL	BDL	BDL
OCT	BDL	BDL	.	BDL	210.000 <T	370.000 <T
NOV	BDL	BDL	.	BDL	340.000 <T	380.000 <T
DEC	BDL	BDL	.	BDL	340.000 <T	380.000 <T
CYANAZINE (BLADEX) (NG/L)		DET'N LIMIT = 100.00	GUIDELINE = 10000 (83)			
JAN	BDL	BDL	BDL	BDL	BDL	BDL
FEB	BDL	BDL	BDL	BDL	BDL	BDL
MAR	BDL	BDL	BDL	BDL	BDL	BDL
APR	BDL	BDL	BDL	BDL	BDL	BDL
MAY	BDL	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	BDL	BDL	BDL	BDL
JUL	BDL	BDL	BDL	BDL	BDL	BDL
AUG	BDL	BDL	.	BDL	BDL	BDL
SEP	BDL	BDL	.	BDL	BDL	BDL
OCT	BDL	BDL	.	BDL	BDL	BDL
NOV	BDL	BDL	.	BDL	BDL	BDL
DEC	160.000 <T	BDL	.	BDL	BDL	BDL

SITE	K21 RAW	MANNHEIM RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
D-ETHYL ATRAZINE (NG/L)		DET'N LIMIT = N/A		GUIDELINE = N/A			
JAN	BDL	BDL	.	BDL	BDL	BDL	BDL
FEB	BDL	BDL	.	BDL	BDL	BDL	BDL
MAR	BDL	BDL	.	BDL	BDL	BDL	BDL
APR	BDL	BDL	.	BDL	BDL	BDL	BDL
MAY	BDL	BDL	.	BDL	BDL	310.000 <T	340.000 <T
JUN	BDL	BDL	.	BDL	BDL	BDL	270.000 <T
JUL	BDL	BDL	.	BDL	BDL	BDL	BDL
AUG	BDL	BDL	.	-	BDL	430.000 <T	320.000 <T
SEP	BDL	BDL	.	-	BDL	BDL	BDL
OCT	BDL	BDL	.	-	BDL	BDL	BDL
NOV	BDL	BDL	.	-	BDL	200.000 <T	230.000 <T
DEC	BDL	BDL	.	-	BDL	240.000 <T	230.000 <T

	SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
	TYPE		STANDING	FREE FLOW			
PHENOLICS (µg/L	PHENOLICS)		DET'N LIMIT = 0.2	GUIDELINE = 2.00 (A3)			
JAN		.600 <T	.600 <T	. .	1.000	1.200	1.200
FEB		BDL	BDL	. .	.600 <T	1.000	1.200
MAR		BDL	1.200	. .	1.000	1.600	.600 <T
APR		.800 <T	.200 <T	. .	BDL	.600 <T	.800 <T
MAY		1.600	1.200	. .	1.800	1.000 <T	2.200
JUN		.600 <T	.800 <T	. .	.600 <T	1.000 <T	.600 <T
JUL		1.200	.800 <T	. .	.400 <T	1.600	1.000
AUG		.600 <T	1.600	. .	.600 <T	1.600	.800 <T
SEP		1.200	2.200	. .	3.000	1.600	2.200
OCT		.600 <T	.400 <T	. .	.600 <T	1.200	1.600
NOV		BDL	BDL	. .	BDL	.600 <T	.400 <T
DEC		BDL	BDL	. .	BDL	BDL	BDL

	SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
	TYPE		STANDING	FREE FLOW			
	VOLATILES						
BENZENE (µg/L)		DET'N LIMIT = .050		GUIDELINE = 5.0 (B1)			
JAN		BDL	BDL	BDL	BDL	BDL	BDL
FEB		BDL	BDL	.050 <T	BDL	BDL	BDL
MAR		BDL	BDL	BDL	BDL	BDL	BDL
APR		BDL	BDL	.200 <T	BDL	BDL	BDL
MAY		BDL	BDL	BDL	BDL	BDL	BDL
JUN		BDL	BDL	BDL	BDL	BDL	BDL
JUL		BDL	BDL	BDL	BDL	BDL	BDL
AUG		BDL	BDL	BDL	BDL	BDL	BDL
SEP		BDL	.050 <T	.050 <T	BDL	BDL	BDL
OCT		BDL	BDL	BDL	BDL	BDL	BDL
NOV		BDL	BDL	BDL	BDL	BDL	BDL
DEC		BDL	BDL	BDL	BDL	BDL	BDL
TOLUENE (µg/L)		DET'N LIMIT = .050		GUIDELINE = 24.0 (B4)			
JAN		BDL	BDL	.050 <T	.100 <T	BDL	BDL
FEB		BDL	BDL	BDL	BDL	BDL	BDL
MAR		BDL	BDL	BDL	.100 <T	BDL	.100 <T
APR		BDL	BDL	.050 <T	.100 <T	.050 <T	BDL
MAY		BDL	.150 <T	.100 <T	.150 <T	BDL	BDL
JUN		.050 <T	BDL	.050 <T	.050 <T	BDL	BDL
JUL		BDL	BDL	.100 <T	.150 <T	BDL	.050 <T
AUG		BDL	.050 <T	BDL	BDL	BDL	.050 <T
SEP		BDL	BDL	BDL	BDL	BDL	BDL
OCT		BDL	BDL	BDL	BDL	BDL	.050 <T
NOV		BDL	BDL	BDL	BDL	BDL	BDL
DEC		BDL	.150 <T	.200 <T	BDL	BDL	BDL
ETHYLBENZENE (µg/L)		DET'N LIMIT = .050		GUIDELINE = 2.4 (B4)			
JAN		.050 <T	.050 <T	.050 <T	.100 <T	.050 <T	BDL
FEB		BDL	BDL	.050 <T	.100 <T	BDL	BDL
MAR		BDL	BDL	.050 <T	.100 <T	BDL	BDL
APR		.100 <T	.050 <T	.100 <T	.250 <T	.150 <T	BDL
MAY		BDL	.050 <T	BDL	.100 <T	BDL	BDL
JUN		BDL	BDL	BDL	BDL	BDL	BDL
JUL		BDL	BDL	BDL	.050 <T	BDL	BDL
AUG		BDL	BDL	BDL	BDL	BDL	BDL
SEP		BDL	BDL	BDL	BDL	BDL	BDL
OCT		BDL	BDL	BDL	BDL	BDL	BDL
NOV		BDL	BDL	BDL	BDL	BDL	BDL
DEC		BDL	BDL	.100 <T	BDL	BDL	BDL

SITE	K21 RAW	MANNHEIM RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
M-XYLENE (µg/L)		DET'N LIMIT = .100		GUIDELINE = 300 (B4)			
JAN	BDL	BDL	.	BDL	.200 <T	BDL	BDL
FEB	BDL	BDL	.	BDL	BDL	BDL	BDL
MAR	BDL	BDL	.	BDL	.300 <T	BDL	BDL
APR	BDL	BDL	.	BDL	.300 <T	BDL	BDL
MAY	BDL	BDL	.	BDL	.300 <T	BDL	BDL
JUN	BDL	BDL	.	BDL	BDL	BDL	BDL
JUL	BDL	BDL	.	BDL	BDL	BDL	BDL
AUG	BDL	BDL	.	BDL	BDL	BDL	BDL
SEP	BDL	BDL	.	BDL	BDL	BDL	BDL
OCT	BDL	BDL	.	BDL	BDL	BDL	BDL
NOV	BDL	BDL	.	BDL	BDL	BDL	BDL
DEC	BDL	BDL	.	BDL	BDL	BDL	BDL
O-XYLENE (µg/L)		DET'N LIMIT = .050		GUIDELINE = 300 (B4)			
JAN	BDL	BDL	.	BDL	.100 <T	BDL	BDL
FEB	BDL	BDL	.	BDL	.050 <T	BDL	BDL
MAR	BDL	BDL	.	BDL	.100 <T	BDL	BDL
APR	BDL	BDL	.	BDL	.150 <T	BDL	BDL
MAY	BDL	BDL	.	BDL	.100 <T	BDL	BDL
JUN	BDL	BDL	.	BDL	.050 <T	BDL	BDL
JUL	BDL	BDL	.	BDL	BDL	BDL	BDL
AUG	BDL	BDL	.	BDL	BDL	BDL	BDL
SEP	BDL	BDL	.	BDL	BDL	BDL	BDL
OCT	BDL	BDL	.	BDL	BDL	BDL	BDL
NOV	BDL	BDL	.	BDL	BDL	BDL	BDL
DEC	BDL	.050 <T	.	.050 <T	BDL	BDL	BDL
STYRENE (µg/L)		DET'N LIMIT = .050		GUIDELINE = 46.5 (D2)			
JAN	.400 <T	BDL	.	.500 <T	BDL	.450 <T	.100 <T
FEB	.150 <T	.100 <T	.	.450 <T	BDL	.100 <T	BDL
MAR	.500 <T	.100 <T	.	.050 <T	BDL	BDL	BDL
APR	.600	BDL	.	.050 <T	BDL	.850 UCS	.200 <T
MAY	.200 <T	.050 <T	.	.100 <T	BDL	BDL	BDL
JUN	.150 <T	.200 <T	.	.200 <T	.050 <T	.150 <T	.150 <T
JUL	.100 <T	.200 <T	.	.200 <T	.400 <T	.350 <T	.150 <T
AUG	BDL	BDL	.	.150 <T	.050 <T	BDL	.150 <T
SEP	.100 <T	.100 <T	.	.050 <T	.150 <T	BDL	.100 <T
OCT	.100 <T	.100 <T	.	BDL	.050 <T	.150 <T	.150 <T
NOV	BDL	.150 <T	.	BDL	.100 <T	.100 <T	.100 <T
DEC	.200 <T	BDL	.	BDL	BDL	BDL	.050 <T

SITE	K21 RAW	MANNHEIM RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE				STANDING	FREE FLOW		
1,1 DICHLOROETHANE (µg/L)		**DET'N LIMIT = .100**		**GUIDELINE = N/A**			
JAN	BDL	BDL	.	.500 <T	.200 <T	BDL	BDL
FEB	BDL	BDL	.	.800 <T	.100 <T	BDL	BDL
MAR	BDL	BDL	.	.300 <T	BDL	BDL	BDL
APR	BDL	BDL	.	.800 <T	.100 <T	BDL	BDL
MAY	BDL	BDL	.	BDL	.200 <T	BDL	BDL
JUN	BDL	BDL	.	.200 <T	BDL	BDL	BDL
JUL	BDL	BDL	.	BDL	.200 <T	BDL	BDL
AUG	BDL	BDL	.	BDL	.100 <T	BDL	BDL
SEP	BDL	BDL	.	1.200	BDL	BDL	BDL
OCT	BDL	BDL	.	.200 <T	BDL	BDL	BDL
NOV	BDL	BDL	.	BDL	BDL	BDL	BDL
DEC	BDL	BDL	.	BDL	.200 <T	BDL	BDL
CHLOROFORM (µg/L)		**DET'N LIMIT = .100**		**GUIDELINE = 350 (A1+)**			
JAN	BDL	.100 <T	.	.400 <T	.700 <T	BDL	13.900
FEB	BDL	.100 <T	.	BDL	.500 <T	.200 <T	12.800
MAR	BDL	2.700	.	1.600	1.500	BDL	14.300
APR	BDL	2.000	.	2.700	2.900	BDL	19.200
MAY	BDL	1.800	.	1.200	2.000	BDL	16.400
JUN	BDL	.500 <T	.	.700 <T	.400 <T	BDL	10.400
JUL	.300 <T	.300 <T	.	.500 <T	.400 <T	BDL	9.500
AUG	.300 <T	.300 <T	.	.300 <T	.300 <T	BDL	6.100
SEP	BDL	.300 <T	.	.500 <T	.300 <T	BDL	6.100
OCT	BDL	.300 <T	.	.300 <T	.400 <T	BDL	6.200
NOV	BDL	.400 <T	.	.300 <T	.400 <T	BDL	3.400
DEC	BDL	.500 <T	.	.500 <T	.400 <T	BDL	4.400
111, TRICHLOROETHANE (µg/L)		**DET'N LIMIT = .020**		**GUIDELINE = 200 (D1)**			
JAN	BDL	BDL	.	BDL	.900	BDL	BDL
FEB	BDL	BDL	.	BDL	.980	BDL	BDL
MAR	.060 <T	BDL	.	BDL	.980	BDL	BDL
APR	.040 <T	BDL	.	BDL	.820	BDL	BDL
MAY	BDL	BDL	.	.020 <T	1.040	.040 <T	.040 <T
JUN	.060 <T	BDL	.	BDL	1.000	.020 <T	BDL
JUL	BDL	BDL	.	BDL	.860	BDL	BDL
AUG	BDL	BDL	.	BDL	.900	BDL	BDL
SEP	BDL	BDL	.	BDL	.720	BDL	BDL
OCT	BDL	BDL	.	BDL	.780	BDL	.060 <T
NOV	.060 <T	BDL	.	BDL	.800	BDL	BDL
DEC	BDL	BDL	.	.040 <T	.860	BDL	BDL

SITE	K21 RAW	MANNHEIM RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
TRICHLOROETHYLENE (µg/L)		**DET'N LIMIT = .100**		**GUIDELINE = 5.0 (D1)**			
JAN	BDL	BDL	.	BDL	.300 <T	BDL	BDL
FEB	BDL	BDL	.	BDL	.300 <T	BDL	BDL
MAR	BDL	BDL	.	BDL	.300 <T	BDL	BDL
APR	BDL	BDL	.	BDL	.300 <T	BDL	BDL
MAY	BDL	BDL	.	BDL	.300 <T	BDL	BDL
JUN	BDL	BDL	.	BDL	.300 <T	BDL	BDL
JUL	BDL	BDL	.	BDL	.300 <T	BDL	BDL
AUG	BDL	BDL	.	BDL	.300 <T	BDL	BDL
SEP	BDL	BDL	.	BDL	.200 <T	BDL	BDL
OCT	BDL	BDL	.	BDL	.200 <T	BDL	BDL
NOV	BDL	BDL	.	BDL	.300 <T	BDL	BDL
DEC	BDL	BDL	.	BDL	BDL	BDL	BDL
DICHLOROBROMOMETHANE (µg/L)		**DET'N LIMIT = .050**		**GUIDELINE = 350 (A1+)**			
JAN	BDL	.300 <T	.	.250 <T	1.900	BDL	6.850
FEB	BDL	.250 <T	.	.200 <T	1.300	BDL	7.450
MAR	BDL	1.750	.	2.550	3.400	BDL	7.550
APR	BDL	2.800	.	4.500	6.300	BDL	7.600
MAY	BDL	2.550	.	1.900	4.900	BDL	7.100
JUN	BDL	.800 <T	.	.700	.650	BDL	4.150
JUL	.100 <T	.700	.	.700	.350 <T	BDL	2.750
AUG	BDL	.400 <T	.	.400 <T	.250 <T	BDL	.900
SEP	BDL	.550	.	.550	.350 <T	BDL	1.050
OCT	BDL	.650	.	.550	.400 <T	BDL	1.500
NOV	BDL	.800	.	.700	.550	BDL	.650
DEC	BDL	1.050	.	.500 <T	.600	BDL	.850 <T
CHLORODIBROMOMETHANE (µg/L)		**DET'N LIMIT = .100**		**GUIDELINE = 350 (A1+)**			
JAN	BDL	.500 <T	.	.400 <T	3.900	BDL	1.900
FEB	BDL	.500 <T	.	.300 <T	2.600	BDL	2.500
MAR	BDL	2.100	.	4.000	5.900	BDL	2.100
APR	BDL	3.300	.	7.100	8.900	BDL	1.900
MAY	BDL	3.100	.	2.900	7.700	BDL	1.800
JUN	BDL	1.300	.	1.000	1.000	BDL	1.100
JUL	.100 <T	1.100	.	1.000	.500 <T	BDL	.600 <T
AUG	BDL	.700 <T	.	.700 <T	.300 <T	BDL	.200 <T
SEP	BDL	.800 <T	.	.400 <T	.500 <T	BDL	.200 <T
OCT	BDL	1.100	.	1.100	.500 <T	BDL	.500 <T
NOV	BDL	1.500	.	1.300	.900 <T	BDL	BDL
DEC	BDL	1.200	.	.700 <T	.600 <T	BDL	.200 <T

SITE	K21 RAW	MANNHEIM RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING		FREE FLOW			
T-CHLOROETHYLENE (µg/L)		**DET'N LIMIT = .050**		**GUIDELINE = 10.0 (C2)**			
JAN	BDL	BDL	.	BDL	.050 <T	BDL	BDL
FEB	BDL	BDL	.	BDL	BDL	BDL	BDL
MAR	BDL	BDL	.	BDL	.100 <T	BDL	BDL
APR	BDL	BDL	.	BDL	BDL	BDL	BDL
MAY	BDL	BDL	.	BDL	BDL	BDL	BDL
JUN	BDL	BDL	.	BDL	BDL	BDL	BDL
JUL	BDL	BDL	.	BDL	BDL	BDL	BDL
AUG	BDL	BDL	.	BDL	BDL	BDL	BDL
SEP	BDL	BDL	.	BDL	BDL	BDL	BDL
OCT	BDL	BDL	.	BDL	BDL	BDL	BDL
NOV	BDL	BDL	.	BDL	BDL	BDL	BDL
DEC	BDL	BDL	.	BDL	.050 <T	BDL	BDL
BROMOFORM (µg/L)		**DET'N LIMIT = .200**		**GUIDELINE = 350 (A1+)**			
JAN	BDL	.600 <T	.	.400 <T	3.600	BDL	BDL
FEB	BDL	.400 <T	.	.200 <T	3.000	BDL	.200 <T
MAR	BDL	.800 <T	.	3.000	4.400	BDL	BDL
APR	BDL	1.000 <T	.	4.000	3.000	BDL	BDL
MAY	BDL	1.000 <T	.	1.400 <T	3.000	BDL	BDL
JUN	BDL	.800 <T	.	.400 <T	.800 <T	BDL	BDL
JUL	BDL	.600 <T	.	.600 <T	BDL	BDL	BDL
AUG	BDL	.400 <T	.	.400 <T	BDL	BDL	BDL
SEP	BDL	.600 <T	.	BDL	.200 <T	BDL	BDL
OCT	BDL	.800 <T	.	.800 <T	.400 <T	BDL	BDL
NOV	BDL	BDL	.	1.000 <T	.600 <T	BDL	BDL
DEC	BDL	.800 <T	.	.600 <T	.600 <T	BDL	BDL
CHLOROBENZENE (µg/L)		**DET'N LIMIT = .100**		**GUIDELINE = 1510 (D3)**			
JAN	BDL	BDL	.	BDL	BDL	BDL	BDL
FEB	BDL	BDL	.	BDL	BDL	BDL	BDL
MAR	BDL	BDL	.	BDL	BDL	BDL	.200 <T
APR	BDL	BDL	.	BDL	BDL	BDL	BDL
MAY	BDL	BDL	.	BDL	BDL	BDL	BDL
JUN	BDL	BDL	.	BDL	BDL	BDL	BDL
JUL	BDL	BDL	.	BDL	BDL	BDL	BDL
AUG	BDL	BDL	.	BDL	BDL	BDL	BDL
SEP	BDL	BDL	.	BDL	BDL	BDL	BDL
OCT	BDL	BDL	.	BDL	BDL	BDL	BDL
NOV	BDL	BDL	.	BDL	BDL	BDL	BDL
DEC	BDL	BDL	.	BDL	BDL	BDL	BDL

	SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
	TYPE		STANDING	FREE FLOW			
1,2 DICHLOROBENZENE (µg/L)		DET'N LIMIT = .050		GUIDELINE = 200 (B1)			
JAN		BDL	BDL	BDL	BDL	BDL	BDL
FEB		BDL	BDL	BDL	BDL	BDL	BDL
MAR		BDL	BDL	BDL	BDL	BDL	BDL
APR		BDL	BDL	BDL	BDL	BDL	BDL
MAY		BDL	BDL	BDL	BDL	BDL	BDL
JUN		BDL	BDL	BDL	BDL	BDL	BDL
JUL		BDL	BDL	BDL	BDL	BDL	BDL
AUG		BDL	BDL	BDL	.050 <T	BDL	BDL
SEP		BDL	BDL	BDL	BDL	BDL	BDL
OCT		BDL	BDL	BDL	BDL	BDL	BDL
NOV		BDL	BDL	BDL	BDL	BDL	BDL
DEC		BDL	BDL	BDL	BDL	BDL	BDL
TOTL TRIHALOMETHANES (µg/L)		DET'N LIMIT = .500		GUIDELINE = 350 (A1)			
JAN		BDL	1.500 <T	1.450 <T	10.100	BDL	22.650
FEB		BDL	1.250 <T	.700 <T	7.400	BDL	22.950
MAR		BDL	7.350	11.150	15.200	BDL	23.950
APR		BDL	8.100	18.300	21.100	BDL	28.700
MAY		BDL	8.450	7.400	17.600	BDL	25.300
JUN		BDL	3.400 <T	2.800 <T	2.850 <T	JDL	21.650
JUL		.500 <T	2.700 <T	2.800 <T	1.250 <T	BDL	12.850
AUG		BDL	1.800 <T	1.800 <T	.850 <T	BDL	7.200
SEP		BDL	2.250 <T	1.450 <T	1.150 <T	BDL	7.350
OCT		BDL	2.850 <T	2.750 <T	1.700 <T	BDL	8.200
NOV		BDL	2.700 <T	3.300 <T	2.450 <T	BDL	4.050 <T
DEC		BDL	3.650 <T	2.250 <T	2.200 <T	BDL	5.350

TRACE LEVELS OF TOLUENE ARE ARTIFACTS DERIVEDO FROM THE ANALYTICAL METHODOLOGY

TRACE LEVELS OF STYRENE ARE CONSIDERED TO BE LABORATORY ARTIFACTS RESULTING FROM THE LABORATORY SHIPPING CONTAINERS

Table 6

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE
BACTERIOLOGICAL			
FECAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	0 (A1)
STANDARD PLATE COUNT MEMBRANE FILTRATION	CT/ML	0	500/ML(A1)
TOTAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	5/100mL(A1)
TOTAL COLIFORM BACKGROUND MF	CT/100ML	0	N/A
CHLOROAROMATICS			
HEXACHLOROBUTADIENE	NG/L	1.000	450. (D4)
1,2,3-TRICHLOROBENZENE	NG/L	5.000	10000 (I)
1,2,3,4-TETRACHLOROBENZENE	NG/L	1.000	10000 (I)
1,2,3,5-TETRACHLOROBENZENE	NG/L	1.000	10000 (I)
1,2,4-TRICHLOROBENZENE	NG/L	5.000	10000 (I)
1,2,4,5-TETRACHLOROBENZENE	NG/L	1.000	38000 (D4)
1,3,5-TRICHLOROBENZENE	NG/L	5.000	10000 (D4)
HEXACHLOROBENZENE	NG/L	1.0	10. (C1)
HEXACHLOROETHANE	NG/L	1.000	1900. (D4)
OCTACHLOROSTYRENE	NG/L	1.000	N/A
PENTACHLOROBENZENE	NG/L	1.000	74000 (D4)
2,3,6-TRICHLOROTOLUENE	NG/L	5.000	N/A
2,4,5-TRICHLOROTOLUENE	NG/L	5.000	N/A
2,6,A-TRICHLOROTOLUENE	NG/L	5.000	N/A
CHLOROPHENOLS			
2,3,4-TRICHLOROPHENOL	NG/L	50.	N/A
2,3,4,5-TETRACHLOROPHENOL	NG/L	50.	N/A
2,3,5,6-TETRACHLOROPHENOL	NG/L	50.	N/A
2,4,5-TRICHLOROPHENOL	NG/L	50.	2600000 (D4)
2,4,6-TRICHLOROPHENOL	NG/L	50.	2000. (B4)
PENTACHLOROPHENOL	NG/L	50.	30000. (B4)
CHEMISTRY (FLD)			
FIELD COMBINED CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD FREE CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD TOTAL CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD PH	DMSNLESS	N/A	6.5-8.5(A4)
FIELD TEMPERATURE	°C	N/A	<15 °C(A1)
FIELD TURBIDITY	FTU	N/A	1.0 (A1)
CHEMISTRY (LAB)			
ALKALINITY	MG/L	.200	30-500(A4)
CALCIUM	MG/L	.100	100. (F2)
CYANIDE	MG/L	.001	.20(A1)
CHLORIDE	MG/L	.200	250. (A3)
COLOUR	TCU	.5	5.0 (A3)
CONDUCTIVITY	UMHO/CM	1.	400. (F2)
FLUORIDE	MG/L	.01	2.4 (A1)
HARDNESS	MG/L	.50	80-100(A4)
MAGNESIUM	MG/L	.05	30. (F2)
SODIUM	MG/L	.20	200. (C3)
AMMONIUM TOTAL	MG/L	.002	.05(F2)
SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE
NITRITE	MG/L	.001	1.0 (A1)
TOTAL NITRATES	MG/L	.02	10. (A1)
NITROGEN TOTAL KJELDAHL	MG/L	.02	N/A
PH	DMSNLESS	N/A	6.5-8.5(A4)
PHOSPHORUS FIL REACT	MG/L	.0005	N/A
PHOSPHORUS TOTAL	MG/L	.002	.40(F2)
SULPHATE	MG/L	.200	500. (A3)
TOTAL SOLIDS	MG/L	1.	500. (A3)
TURBIDITY	FTU	.02	1.0 (A1)

ANTIMONY	UG/L	.050	10.	(F3)
ARSENIC	UG/L	.050	50.	(A1)
BARIUM	UG/L	.020	1000.	(A1)
BORON	UG/L	.200	5000.	(A1)
BERYLLIUM	UG/L	.010	0.20	(H)
CADMIUM	UG/L	.050	5.0	(A1)
COBALT	UG/L	.020	1000.	(H)
CHROMIUM	UG/L	.100	50.	(A1)
COPPER	UG/L	.100	1000.	(A3)
IRON	UG/L	5.0	300.	(A3)
MERCURY	UG/L	.01	1.0	(A1)
MANGANESE	UG/L	.050	50.	(A3)
MOLYBDENUM	UG/L	.020	500.	(H)
NICKEL	UG/L	.100	50.	(F3)
LEAD	UG/L	.020	50.	(A1)
SELENIUM	UG/L	.200	10.	(A1)
SILVER	UG/L	.020	50.	(A1)
STRONTIUM	UG/L	.100	2000.	(H)
THALLIUM	UG/L	.010	13.	(D4)
TITANIUM	UG/L	.100	N/A	
URANIUM	UG/L	.020	20.	(A2)
VANADIUM	UG/L	.020	100.	(H)
ZINC	UG/L	.020	5000.	(A3)

PHENOLICS

PHENOLICS (UNFILTERED REACTIVE)	UG/L	.2	2.0	(A3)

PESTICIDES & PCB

ALDRIN	NG/L	1.0	700.	(A1)
AMETRINE	NG/L	50.	300000.	(D3)
ATRAZINE	NG/L	50.	60000.	(B3)
ALPHA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	700.	(G)
BETA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	300.	(G)
GAMMA HEXACHLOROCYCLOHEXANE(LINDANE)	NG/L	1.0	4000.	(A1)
ALPHA CHLORDANE	NG/L	2.0	7000.	(A1)
GAMMA CHLORDANE	NG/L	2.0	7000.	(A1)
BLADEX	NG/L	100.	10000.	(B3)
DIELDRIN	NG/L	2.0	700.	(A1)
METHOXYCHLOR	NG/L	5.0	900000.	(B1)
ENDOSULFAN 1 (THIODAN I)	NG/L	2.0	74000.	(D4)
ENDOSULFAN 2 (THIODAN II)	NG/L	4.0	74000.	(D4)
ENDRIN	NG/L	4.0	200.	(A1)
ENDOSULFAN SULPHATE(THIODAN SULPHATE)	NG/L	4.0	N/A	

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE	
HEPTACHLOR EPOXIDE	NG/L	1.0	3000.	(A1)
HEPTACHLOR	NG/L	1.0	3000.	(A1)
METOLACHLOR	NG/L	500.	50000.	(B3)
MIREX	NG/L	5.0	N/A	
OXYCHLORDANE	NG/L	2.0	N/A	
O,P-DDT	NG/L	5.0	30000.	(A1)
PCB	NG/L	20.0	3000.	(A2)
O,P-DDD	NG/L	5.0	N/A	
PPDDE	NG/L	1.0	30000.	(A1)
PPDDT	NG/L	5.0	30000.	(A1)
ATRATONE	NG/L	50.	N/A	
ALACHLOR	NG/L	500.	35000.	(D2)
PROMETONE	NG/L	50.	52500.	(D3)
PROPAZINE	NG/L	50.	16000.	(D2)
PROMETRYNE	NG/L	50.	1000.	(B3)
SENCOR (METRIBUZIN)	NG/L	100.	80000.	(B2)
SIMAZINE	NG/L	50.	10000.	(B3)

POLYAROMATIC HYDROCARBONS

PHENANTHRENE	NG/L	10.0	N/A	
ANTHRACENE	NG/L	1.0	N/A	
FLUORANTHENE	NG/L	20.0	42000.	(D4)
PYRENE	NG/L	20.0	N/A	
BENZO(A)ANTHRACENE	NG/L	20.0	N/A	
CHRYSENE	NG/L	50.0	N/A	
DIMETHYL BENZO(A)ANTHRACENE	NG/L	5.0	N/A	
BENZO(E)PYRENE	NG/L	50.0	N/A	
BENZO(B)FLUORANTHENE	NG/L	10.0	N/A	

PERYLENE	NG/L	10.0	N/A	
BENZO(K)FLUORANTHENE	NG/L	1.0	N/A	
BENZO(A)PYRENE	NG/L	5.0	10.	(B1)
BENZO(G,H,I)PERYLENE	NG/L	20.0	N/A	
DIBENZO(A,H)ANTHRACENE	NG/L	10.0	N/A	
INDENO(1,2,3-C,D)PYRENE	NG/L	20.0	N/A	
BENZO(B)CHRYSENE	NG/L	2.0	N/A	
CORONENE	NG/L	10.0	N/A	

SPECIFIC PESTICIDES

TOXAPHENE	NG/L	N/A	5000.	(A1)
2,4,5-TRICHLOROBUTYRIC ACID (2,4,5-T)	NG/L	50.	200000.	(B4)
2,4-DICHLOROBUTYRIC ACID (2,4-D)	NG/L	100.	100000.	(A1)
2,4-DICHLORORPHENOXYBUTYRIC ACID	NG/L	200.	18000.	(B3)
2,4-D PROPIONIC ACID	NG/L	100.	N/A	
DICAMBA	NG/L	100.	120000.	(B1)
PICLORAM	NG/L	100.	190000.	(B3)
SILVEX (2,4,5-TP)	NG/L	50.	10000.	(A1)
DIAZINON	NG/L	20.	20000.	(B1)
DICHLOROVOS	NG/L	20.	N/A	
DURSBAN	NG/L	20.	N/A	
ETHION	NG/L	20.	35000.	(G)
GUTHION(AZINPHOSMETHYL)	NG/L	N/A	20000.	(B1)
MALATHION	NG/L	20.	190000.	(B1)
MEVINPHOS	NG/L	20.	N/A	
METHYL PARATHION	NG/L	50.	7000.	(A1)
METHYLTRITHION	NG/L	20.	N/A	

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE	
PARATHION	NG/L	20.	50000.	(B1)
PHORATE (THIMET)	NG/L	20.	2000.	(B3)
RELDAN	NG/L	20.	N/A	
RONNEL	NG/L	20.	N/A	
AMINOCARB	NG/L	N/A	N/A	
BENONYL	NG/L	N/A	N/A	
BUX (METALKAMATE)	NG/L	2000.	N/A	
CARBOFURAN	NG/L	2000.	90000.	(B1)
CICP (CHLORPROPHAM)	NG/L	2000.	350000.	(G)
DIALLATE	NG/L	2000.	30000.	(N)
EPTAM	NG/L	2000.	N/A	
IPC	NG/L	2000.	N/A	
PROPOXUR (BAYGON)	NG/L	2000.	90000.	(G)
SEVIN (CARBARYL)	NG/L	200.	90000.	(B1)
SUTAN (BUTYLATE)	NG/L	2000.	245000.	(D3)

VOLATILES

BENZENE	UG/L	.050	5.0	(B1)
TOLUENE	UG/L	.050	24.0	(B4)
ETHYLBENZENE	UG/L	.050	2.4	(B4)
PARA-XYLENE	UG/L	.100	300.	(B4)
META-XYLENE	UG/L	.100	300.	(B4)
ORTHO-XYLENE	UG/L	.050	300.	(B4)
1,1-DICHLOROETHYLENE	UG/L	.100	7.0	(D1)
ETHLYENE DIBROMIDE	UG/L	.05	.05	G)
METHYLENE CHLORIDE	UG/L	.500	50.	(B1)
TRANS-1,2-DICHLOROETHYLENE	UG/L	.100	70.	(D5)
1,1-DICHLOROETHANE	UG/L	.100	N/A	
CHLOROFORM	UG/L	.100	350.	(A1+)
1,1,1-TRICHLOROETHANE	UG/L	.020	200.	(D1)
1,2-DICHLOROETHANE	UG/L	.050	5.0	(D1)
CARBON TETRACHLORIDE	UG/L	.200	5.0	(B1)
1,2-DICHLOROPROPANE	UG/L	.050	6.0	(D5)
TRICHLOROETHYLENE	UG/L	.100	50.	(B1)
DICHLOROBROMOMETHANE	UG/L	.050	350.	(A1+)
1,1,2-TRICHLOROETHANE	UG/L	.050	.60	(D4)
CHLORODIBROMOMETHANE	UG/L	.100	350.	(A1+)
TETRACHLOROETHYLENE	UG/L	.050	10.0	(C2)
BROMOFORM	UG/L	.200	350.	(A1+)
1,1,2,2-TETRACHLOROETHANE	UG/L	.050	0.17	(D4)
CHLOROBENZENE	UG/L	.100	60.	(D5)
1,4-DICHLOROBENZENE	UG/L	.100	1.0	(B4)
1,3-DICHLOROBENZENE	UG/L	.100	130.	(G)

1,2-DICHLOROBENZENE	UG/L	.050	3.0	(B4)
TRIFLUOROCHLOROTOLUENE	UG/L	.100	N/A	
TOTAL TRIHALOMETHANES	UG/L	.500	350.	(A1)
STYRENE	UG/L	.05	140.	(D5)